EVALUATION OF IMMEDIATE POST OPERATIVE COMPLICATIONS AFTER LAPAROSCOPIC CHOLECYSTECTOMY

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Dedicated

to

my Family

&

Teachers

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God give me wisdom so that at my worst I remain infallible – able to heal a wound, cure the sick, create with surgery that matches the original design and save a life. Grant me judgement, more than proficiency so that I remember my limitations, work with compassion, recognize surgery as the last resort and prolong life when I can while respecting the dignity of dying. Bless my hands so that I may achieve all this and carry out the task you have destined me for. Lastly, accept my gratitude for your countless blessings.

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Dr. KSHISH AGGARWAL

LIST OF ABBREVIATIONS

CA	CYSTIC ARTERY
CBD	COMMON BILE DUCT
CD	CYSTIC DUCT
CHD	COMMON HEPATIC DUCT
CVS	CRITICAL VIEW OF SAFETY
GB	GALL BLADDER
GSS	GERMAN SURGICAL SOCIETY
LC	LAPAROSCOPIC CHOLECYSTECTOMY
LHA	LEFT HEPATIC ARTERY
MS	MIRIZZI SYNDROME
OC	OPEN CHOLECYSTECTOMY
OPD	OUT PATIENT DEPARTMENT
PACU	POST ANESTHESIA CARE UNIT
PONV	POST OPERATIVE NAUSEA AND VOMITING
POUR	POST OPERATIVE URINARY RETENTION
PUR	POST OPERATIVE URINARY RETENTION
PP	PNEUMOPERITONEUM
RHA	RIGHT HEPATIC ARTERY

ABSTRACT

Introduction: Laparoscopic cholecystectomy is the treatment of choice for gall stone disease. In this study we aim to evaluate need for conversion to open cholecystectomy and the immediate post operative complications following laparoscopic cholecystectomy .

Aims: To evaluate the immediate post operative complications after elective Laparoscopic cholecystectomy

Materials and methods: This is a prospective study held in the Department Of Surgery in Dayanand Medical College And Hospital, Ludhiana in patients undergoing LC.

Results: 267 patients undergoing laparoscopic cholecystectomy during a period of 1 year were enrolled in the study. need for conversion was found in 4.1 % (n=11) patients. The incidence of shoulder tip pain and PONV was 36.3 %(n=97) and 37.5 % (n=100) respectively . POUR was observed in 8.2 % (n=22) patients. Intrabadominal drain was placed in 31.5%(n=84) patients with drain output being serous in most of the cases except in three cases where it was found to be bilious in two and hemorrhagic in one respectively.

Conclusion: The conclusion of the study is that rate of conversion to open surgery is low in experienced hands. the surgeon should keep a low threshold for conversion to open surgery and it should be taken as a step in the interest of the patient rather than be looked upon as an insult to the surgeon. The incidence of immediate post operative complications like shoulder tip pain, abdominal distension, PONV, POUR is considerable and shall be kept in mind while planning the treatment of patient. Drain after LC shall be used selectively and be avoided in patients with normal intraoperative findings.

Keywords: Laparoscopic cholecystectomy, complications, Post Op Nausea vomiting (ponv), bleeding, shoulder tip pain, urinary retention

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INTRODUCTION

Gallstone disease is amongst the most common medical conditions that necessitates surgical intervention. Every year, approximately 500,000 cholecystectomies are performed in the United States. Gallstones have been shown to become more common as people get older. Obesity, diabetes mellitus, oestrogen therapy, pregnancy, hemolytic diseases and cirrhosis are the risk factors for gall stone disease. Gallstones can be classified as cholesterol, mixed, or pigment gallstones based on their gross and compositional characteristics. Gallstone disease is frequently associated with epigastric and right upper quadrant pain that usually occurs 30-60 minutes after meals.[1]

In 1733, Jean-Louis Petit, the founder of gall bladder surgery, proposed removing gallstones and draining the gall bladder in patients with empyema, resulting in a fistula, which he successfully performed in 1743. Petit's rigid surgical intervention criteria evolved over time. It included the use of skin stimulants to cause the gallbladder to adhere to the abdominal wall, followed by the insertion of an indwelling trocar to remove stones and bile from the adhered gallbladder in order to reduce peritonitis.[2]

Gall bladder surgery was thus practised until 1859, when J. L. W Thudichum proposed a two-stage elective cholecystostomy. In the first stage, the inflamed gall bladder was sewed to the anterior abdominal wall via a small incision, which served as a route for later gall stone removal. Around the same time, on July 15, 1867, Dr. John Stough Bobbs of Indianapolis noticed an inflamed and adhered sac containing "several solid ordinary rifle bullet" like structures while operating on a patient with a suspected ovarian cyst. He opened the sac, which happened to be the gall bladder, which was packed with multiple gallstones. After closing the gallbladder defect, he removed the gallstones and left the gallbladder in the abdomen. The patient recovered well.[3]

In 1878, Marion Simms performed first cholecystostomy on a 45-year-old woman with obstructive jaundice. He is credited for designing and performing the same. Theodor Kocher was able to perform the first successful cholecystostomy in June of same year.[4]

While others were primarily concerned with the disease's outcome, Carl Johann August Langenbuch observed that these measures were only temporary and rallied to find a permanent solution to the disease. Biliary colic was more of a medical problem at the time, and ordinary surgeons were not well-versed in the subject. Because of his unique position, he encountered a large number of such patients here. By this time, two animal experiments conducted by Zambecarri in 1630 and Teckoff in 1667 had demonstrated that the gall bladder was not necessary for life. Furthermore, doctors believed that the gall bladder was the source of the problem.[4]

Langenbuch invented cholecystectomy through cadeveric dissection and successfully removed the gall bladder of a 43-year-old man who had been suffering from the disease for sixteen years on July 15, 1882. The patient was discharged from the hospital without incident after six weeks. His first report was published in 1882, but it was ignored. This new cholecystectomy was pitted against the long-standing cholecystostomy. Langenbuch's cholecystectomy eventually persuaded an increasing number of surgeons worldwide. By the turn of the century, it had been established that cholecystectomy could provide permanent pain relief.[5]

For the next hundred years, little changed in the field of cholecystectomy until 1985, when E. Muhe of Germany performed the world's first laparoscopic cholecystectomy, which many authors incorrectly attribute to Philip Mouret. In 1987, Philip Mouret contributed to the procedure by rotating the entire right lobe of the liver cephalad while applying traction to the gallbladder. Within two years, the procedure had been adopted in the United States, and due to the overwhelming demand from patients, standard traditional stages of scientific evaluation were bypassed. Finally,

in September 1992, a National Institutes of Health consensus conference in Bethesda concluded that laparoscopic cholecystectomy was the treatment of choice for symptomatic gall stone disease. The advent of laparoscopic cholecystectomy transformed the field of surgery to a degree that had never before been witnessed in surgical history.[6]

Laparoscopic cholecystectomy (LC) is unquestionably the procedure of choice for symptomatic gallstone disease today. This technique has fewer scars, less incisional pain, a shorter hospital stay, and a faster functional recovery. [7] The most recent advancement in laparoscopic surgery is that laparoscopic cholecystectomy is now performed as a day care procedure in many centers throughout the United States and Canada. A day care surgery is one in which the patient is discharged from the hospital on the same day as the procedure. However, day care laparoscopic surgery has yet to gain widespread acceptance among doctors in Asia and Europe, where patients are still monitored overnight after surgery. The primary concern with using LC as a day-surgery procedure is an uneventful postoperative period, which is dependent on several factors, the most important of which are bleeding and bile duct injury, need for conversion, pain control, and postoperative nausea and vomiting, post operative urinary retention and presence of drains.[8]

The recovery from surgery is divided into three phases 1) an immediate or post anesthetic phase, 2) an intermediate phase which involves the hospitalization period 3) a convalescent phase. Immediate post operative period is taken as the first 24 hours after surgery or the time in which the patient remains in PACU .The patient can be discharged from the recovery room when cardivascuar, pulmonary and neurological functions have returned to baseline , which usually occurs in less than 12 hours following laparoscopic cholecystectomy.[9]

Postoperative nausea and vomiting (PONV) is troublesome and has been reported frequently as a consequence of anesthesia and surgery. PONV predisposes the patient to the risk of aspiration of gastric contents,

wound dehiscence, and psychological distress, as well as delayed recovery and discharge times. Patients undergoing laparoscopic cholecystectomy (LC) are at a particularly high risk for the development of PONV, and an incidence of even 63–72% is reported in some studies.[10]

The biggest advantage of laparoscopy compared with open surgery was the decreased incidence of postoperative pain. However, even laparoscopic surgery is not completely free of postoperative pain and is still a considerable problem. Post operative pain increases the morbidity after laparoscopic cholecystectomy and is the primary reason for prolonged hospitalization.[11,12]

Pain is frequently complained in the region of back, shoulder and discomfort at port site incisions. Shoulder and sub-diaphragmatic pain occurs in about 12% to 60% of patients. Pain intensity peaks during the first few postoperative hours and usually after 2 -3 days it declines. Multifactorial etiology is responsible for pain after laparoscopic cholecystectomy and primarily includes the peritoneal insufflation with CO_2 which causes phrenic nerve irritation in the peritoneal cavity. Additional contributing factors include psychological, social, cultural status and individual factors. The administration of non-steroidal anti-inflammatory drugs (NSAIDs) and narcotics, gas drainages, intraperitoneal spray of local anesthetics and opioids are carried out to reduce pain after a laparoscopic cholecystectomy.[13]

Postoperative urinary retention (POUR) is the incapability to pass urine after a surgical procedure despite having a full bladder. It is a relatively common complication of both outpatient and inpatient procedures. It is important to recognize and manage postoperative urinary retention for anyone responsible for the treatment of a postoperative patient. POUR has an incidence of between 5% and 70%depending on several factors.[14]

Prolonged duration of surgery and factors like comorbidities and type of anesthesia have also been help as contributing factors for development of postoperative urinary retention (POUR). Bladder overdistension, urinary

tract infection, and catheter-related complications can happen if POUR is not managed adequately.[15]

Laparoscopic cholecystectomy despite being the gold standard for benign gallbladder pathologies sometimes required the conversion of procedure to open for the safe completion of surgery [16] Conversion increases the patient morbidity, duration of stay, cost of treatment, increased risk of additional procedures, and a higher rate of readmission within 30 days. Literature has shown many inconsistent factors that may result in the need to convert laparoscopy to open surgery in the treatment of gallstone disease. According to studies the factors which are mainly responsible for the conversion of gall stone disease are inflammatory changes, acute cholecystitis, age, sex and presence of coexisting disease/s.[17]

Bleeding accounts for up to one third of all major complications seen in Laparoscopic Cholecystectomy and is the second most common cause of death in patients undergoing the procedure (after anaesthesia-related complications). Laparoscopic cholecystectomy can be associated with serious, potentially life-threatening complications which may arise due to injury to part of the biliary tree (biliary complications) or from procedure-related injury to other organs/ systems (non-biliary complications).[18]

Biliary complications occurring after LC have been the focus of much attention in literature, as they lead to significant morbidity (bile collections, fistulae, jaundice, cholangitis, sepsis, and other complications of bile stasis) and usually require re-operation, preferably by a specialized surgical team, to reconstruct and drain the biliary tree adequately. On the other hand, the non-biliary injuries, although reported with a variable incidence in many series and case reports, have not received their ‘due’ as complications of LC that are as dangerous and devastating as their biliary counterparts. These injuries can range from minor to major injuries and have the potential to cause significant morbidity and mortality.[19]

In this study we aim to count the incidence of complications after laparoscopic cholecystectomy in immediate post operative period like the

need for conversion, shoulder tip pain, post operative nausea and vomiting, post operative urinary retention, the need for drain insertion with emphasis on drain output volume and content. The immediate post operative period will be taken as the period upto 12 hours post operatively as after LC cardiovascular, neurological and pulmonary functions return to baseline within 12 hours.

AIMS AND OBJECTIVES

To evaluate the immediate complications after elective Laparoscopic cholecystectomy like need for converting Laparoscopic to open cholecystectomy, bleeding from abdominal cavity, nausea, vomiting, abdominal distension, shoulder pain and urinary retention.

REVIEW OF LITERATURE

Endoscopy has been used to study the non-visible parts of the body since Medieval Arabia.[20] In 1795, Bozzini examined the rectum and uterus with a candle as a light source.[21] Nitze is credited with providing a realistic answer to the problem of distal illumination by using an overheated luminous sliver of platinum at the tip of his cystoscope in 1879.[22]

Kelling performed the first experimental laparoscopy on dogs in 1901. After insufflating the abdomen with air with a needle using a big cannula, he inspected the peritoneal cavity with a Nitze cystoscope. He coined the term "Koelioskopie" to describe the approach. Jacobaeus was a Swedish physician who used an endoscope to inspect human bodily cavities. In 1911, he termed the operation laparo-thorakoskopie and reported 115 chest and abdominal cavity investigations in 72 individuals.[23] However, it was not until 1920 that biopsy was introduced to the field of laparoscopy, which had hitherto only been employed for inspection.[24]

Kalk, a German hepatologist, is credited with inventing contemporary laparoscopy.[25] His inventions were remarkable, and he is credited with developing a 135-degree oblique view laparoscope, which Robert Fear described as the "first high-quality equipment." In 1929, he was the first to describe the dual trocar technique. Later efforts in therapeutic laparoscopy were built on the foundation of the dual trocar technique. In 1951, he published a personal series of 2000 laparoscopies in which no mortality was reported.[26]

This caused damage to the underlying gut and major vessels, which was a major concern. To get around this, air was injected into the peritoneal cavity with a needle and syringe before the trocar was inserted. In 1918, Goetze invented an automatic pneumoperitoneum needle for safe puncture and insufflation [27], and Veress developed a spring-loaded needle in 1938.[28]

The formation of pneumoperitoneum is a blind procedure that involves inserting a needle and the first trocar into the peritoneal cavity. As a result, injury to underlying structures can sometimes complicate matters. To address this concern, Hasson used a trocar with a blunt obturator to enter the peritoneal cavity under direct visualization in 1974. This technique was originally known as "open laparoscopy," but it is now more commonly known as the Hasson technique.[29]

Hopkins, a British physicist, is credited with developing the rod lens system in 1966. This is regarded as the most significant advancement in the evolution of laparoscopy.[30] This system utilised air spaces between rod-shaped glass elements to function as a light transmitter. When compared to the serial glass lenses system that was previously used, this significantly improved resolution and brightness. The rod lens system is still in use today.[31]

Hopkins first applied for a patent for the rod-lens system in 1959. However, the English and American companies to whom he pitched the system were uninterested. They were completely satisfied with the quality of the lens systems that they had produced and were unwilling to develop a completely new system. The situation changed in 1965, when Karl Storz, a manufacturer of precision medical instruments, learned about the rod-lens system principle. Had it not been for Storz, the rod-lens cystoscope may never have progressed to clinical application. Hopkins' invention and Storz's design and instrumentation expertise have made the world a "brighter place today." [32]

Raoul Palmer proposed in 1947 that changing the patient's position after abdominal insufflation can aid in visualizing the field of interest. He was also the first to recognize the significance of measuring intra-abdominal pressure.[33]

Kurt Semm, a German gynecologist and engineer[34], was a researcher and clinician in the field of laparoscopy. He is credited for developing the automatic insufflator that continuously monitored intra-abdominal

pressure, the gas flow and high flow irrigation apparatus, the pre-tied suture loop (Roeder loop) and its application, and the laparoscopic clip applier. He also developed the lap needle holder, scissors, and a variety of other laparoscopic instruments. He also pioneered several laparoscopic surgical procedures, including laparoscopic tubectomy, bowel suturing, and laparoscopic appendectomy. He created the Pelvi-trainer to teach surgeons some of the techniques needed for operative laparoscopy.[35]

LAPAROSCOPIC CHOLECYSTECTOMY – DEVELOPMENT

The first laparoscopic cholecystectomy was performed by E. Muhe of Germany. Muhe presented his findings on laparoscopic cholecystectomy at the German Surgical Society Congress in 1986. Muhe's claims were met with skepticism by the audience. Despite his initial rejection in 1986, Muhe received the GSS Anniversary Award for his pioneering work in endoscopic surgery at the 109th German Surgical Society (GSS) Congress on April 21, 1992. His laparoscopic cholecystectomy was described as one of the greatest original achievements of German medicine in recent history by Franz Gall, president of the GSS, when he received this award. He paved the way for the use of laparoscopy in surgical practice. Muhe's work on laparoscopy was never published in English. [36]

F.Dubois, Icaard, and Berthelot published a paper in 1990 describing the instrumentation and techniques of laparoscopic cholecystectomy.[37] Meanwhile, Perissat, Collet, and Belliard published a study of a series of successful laparoscopic surgeries for cholelithiasis.[38]

Prof. A. Cushieri is inextricably linked to the evolution and popularity of laparoscopy. Cushieri, Berci, and Mcsherry[39] published the methodology and their experience with LC in 1990. Cushieri also published an important book titled 'The Laparoscopy Evolution-Walk Carefully Before We Run' in 1990.[40] In the paper, he proposed a prospective randomized controlled trial to define the indications for laparoscopic surgery and to confirm its benefits when compared to open surgery. S.Paterson Brown, O-J Carter,

and D.C Garden[41,42] wrote in a 1991 editorial in the British Journal of Surgery that Cushieri is one of the few surgeons who was really dedicated to laparoscopic cholecystectomy.

Ure BM, Spangenbergr,[43] and colleagues examined 100 patients who underwent LC between October 1989 and May 1990. According to the publication, the average age of the patients was 45 years, with 65 percent classified as grade four by Mcsherry classification.[44] Only one case of major per-operative bile leak from CBD was reported. Peritonitis and paralytic ileus were major postoperative complications in two cases. In twelve cases, minor complications such as thrombophlebitis, wound discharge, and haematoma were observed. The average operative time was 120 minutes for the first 50 patients and 90 minutes for the next 50 patients, with a three-day postoperative hospitalization.

In 100 laparoscopic cholecystectomy procedures, Neugebauer, H.Troidl, and W.Spangenberger et al.[45] reported no death and only three major early complications. One of the three complications was iatrogenic CBD injury, which was treated with a minilaparotomy and T-tube drainage. The other two were a subacute intestinal obstruction and bacterial peritonitis, both of which necessitated a laparotomy.

Cushieri, Dubois, Novert, and colleagues [46], compiled 1236 cases, and a report on European experiences with laparoscopic cholecystectomies was published in 1991. Three French, three German, and one British surgeons performed the surgeries, which resulted in a zero-mortality rate and a three-day median hospital stay. The conversion rate was 3.6 percent, owing to technical difficulties caused by uncontrollable cystic artery bleeding and gross cholecystitis.

Laparoscopic cholecystectomy – Present status

LC was initially restricted to low risk patients who met the following criteria:

1.symptoms suggestive of biliary colic,

2.stones documented using ultrasonography or contrast radiography

3. there has been no previous upper abdominal surgery

4.the absence of acute cholecystitis

5.stones with a diameter of less than 3.0 cm and

6. There was no evidence of common bile duct disease.

Today, however, the indications for laparoscopic cholecystectomy have greatly expanded, with up to 95% of patients with symptomatic gallstone disease considered to be candidates.

C.K.Kum P.M.Y. Goh[47] and colleagues published a study in 1994 comparing the efficacy of LC versus OC for acute cholecystitis and LC versus OC for routine indications. They concluded that laparoscopic gall bladder removal was successful in 46 of 66 patients during an acute attack, with the mean time for operation being the same for both the laparoscopic and open methods. The incidence of bile duct injury was reported in 1 patient out of 66 patients in the laparoscopy for cholecystitis group, 2 patients out of 266 patients in the routine lap chole group, and none in the open method group. Patients who underwent laparoscopy recovered more quickly after surgery. As a result, it was determined that in the vast majority of acute cholecystitis cases, laparoscopic cholecystectomy is feasible. Although the conversion rate and the incidence of complications are higher after laparoscopic cholecystectomy, post-operative recovery is much faster if done safely.

Koo K.P. and Thirlby R.C.[48] et al. discussed the optimal timing of LC during an acute attack in a paper. The patients were divided into three groups: those who received LC within 72 hours of the onset of symptoms (16 patients), those who received surgery within 7 days (19 patients), and those who had symptoms that lasted more than 7 days (25 patients). The reported conversion rates for groups 1 and 2&3 were 12% and 30%, respectively. There were no reports of bile duct injuries or deaths. Taking conversion rates, hospital costs, and recovery time into account, it was determined that laparoscopic cholecystectomy is completely acceptable if performed within 72 hours of the onset of symptoms, after which interval cholecystectomy is recommendable.

Habib FA, Kolachalams, and colleagues[49] published a report on the laparoscopic management of gangrenous cholecystitis in 2001. According to his report, gangrenous cholecystitis was confirmed by histopathological examination in 53 of 281 patients who underwent LC for acute cholecystitis. LC was performed successfully in 68% of them, with a 32% conversion rate. According to the study's findings, preoperative factors did not predict conversion in patients chosen for LC for acute cholecystitis with presumed gangrene. The surgery was not significantly prolonged, and the outcome in terms of morbidity, admission to the intensive care unit, and hospital stay was significantly better in those who had successful lap cholecystectomy.

In 1998, Jawad AJ and colleagues reviewed LC for cholelithiasis during infancy and childhood and concluded that LC is safer, more effective, and less expensive than OC, so LC is the surgery of choice for cholecystectomy in children.[50]

In February 2001, Rechardson WS, Fuman GS, Burch et al.[51] published a research with 847 patients that stated that LC may be done safely on an out-patient basis provided proper patient selection and counseling is done.

Laparoscopic Cholecystectomy – Review of Complications

Many complications associated with LC are similar to those seen with traditional OC.

Complications of Laparoscopic cholecystectomy

Hemorrhage

Bile duct injury

Bile leak

Shoulder tip pain

Post operative nausea vomiting (PONV)

Post operative urinary retention (POUR)

Abdominal distension

These consequences are significantly impacted by a surgeon's experience, with the bulk of these difficulties happening in the surgeon's

early years of practice. Moore and Bennett conducted a multivariate regression study of 8839 LCs in 1995, finding that a surgeon had a 1.7 percent likelihood of a bile duct damage in the first case and a 0.17 percent chance of a bile duct injury in the 50th case, according to the regression model.[52]

Age, emergency treatment, acute cholecystitis, peritoneal adhesions, chronic cholecystitis, and inflammatory infiltration were all statistically significant risk factors in the conversion from laparoscopic to open cholecystectomy, according to Luckaz Warchalowski et al.[53]

In a retrospective analysis, Kuldip Singh et al found that the surgeon's expertise and thorough surgical technique are the most essential elements in achieving a low complication rate. In the event of a difficulty, any misadventure should be avoided, and the conversion threshold should be kept low.[54]

Dc wherry et al conducted an objective study of the whole patient population receiving laparoscopic cholecystectomies to evaluate the prevalence of problems in 5607 patients undergoing laparoscopic cholecystectomies and found that 8.07 percent of patients required open cholecystectomy.[55]

In a study to establish the diagnostic and treatment problems of Mirizzi syndrome, Shirah et al stated that probable cases should not be overlooked. The main issue is the difficulty in making a preoperative diagnosis. Because it is most commonly encountered intraoperatively, the approach should be cautious and rational in determining the correct kind of Mirizzi by a complete diagnostic laparoscopy and, as a result, providing the optimal treatment for the subtype to obtain the best result.[56]

In a study to evaluate the factors that lead to open cholecystectomy in acute cholecystitis, Oymaci et al observed that male sex is an important factor in conversion cholecystectomy. According to their research, blood leucocyte, hyperglycemia, and elevated amylase levels were also critical

variables. They proposed that the presence of these characteristics be considered during preoperative counseling and decision making.[57]

Kolla sb et colleagues conducted a study to see if lap chole was safe and effective in acute cholecystitis. Early laparoscopic cholecystectomy for acute cholecystitis is safe and feasible, they concluded. It also has the advantage of a shorter hospital stay, and it will be offered to patients with acute cholecystitis if the surgery is done within 72 to 96 hours of the onset of symptoms.[58]

In a study comparing the complications and mortality associated with laparoscopic cholecystectomy versus open cholecystectomy, Ja Shea et al determined that laparoscopic cholecystectomy is a safe treatment. The only serious side effect of laparoscopic cholecystectomy is an elevated incidence of common bile duct injury.[59]

Over a four-year period (1997-2000), Kaushik R et al did a retrospective assessment of 1233 patients who had LC at GMC&H, Chandigarh, and discovered that the total conversion rate was 7.06 percent (87 patients). A frozen Calot's triangle was the most common cause of conversion (52 cases), followed by a common bile duct damage (8 patients). Despite several hands in training, they arrived at the conclusion that the LC complication rate is within acceptable ranges. The total conversion rate has increased as a result of the increase in elective conversions, while the incidence of complications has decreased as a result of a "no hesitation" policy in converting to open surgery.[60]

Saadati Karin et al. conducted a double blind randomized clinical study in which 150 patients were allocated to one of three groups at random (50 patients in each group). Group A got intraperitoneal irrigation with normal saline (NS). Groups B and C got sodium bicarbonate irrigation and no irrigation, respectively. Pain was assessed using a visual analogue scale (VAS) at 6, 18 and 24 hours following surgery, as well as one week afterwards. There was no significant difference between groups in terms of age, gender, prior medical history, or smoking history ($p>0.05$). Only the

sodium bicarbonate and non-washing groups reported substantially decreased left shoulder tip discomfort at 6, 18, and 24 hours postoperatively (P=0.04, P=0.02, and P=0.009, respectively). As a result, it was established that Sodium bicarbonate peritoneal irrigation after laparoscopic cholecystectomy may minimize the severity of postoperative shoulder tip pain.[61]

Ure BM et al. reported a yearlong prospective research on pain in LC patients. Pain was assessed using a 100-point visual analogue scale (VAS), a five-point verbal rating scale, and analgesics. Pain was discovered to be the most prevalent symptom, both before and after surgery. The average degree of discomfort 5 hours after the procedure was 37 VAS points, which dropped to 16 on the third day. In 106 individuals, the severity of pain was more than 50 VAS points (27.8 percent). Female patients experienced much more pain than male patients, although analgesic usage was equivalent in both groups. The length of the surgery, intraoperative events (such as bile, blood, or gallstones), and further laparoscopic operations had no influence on discomfort (adhesiolysis, lavage, extension of an incision, suture of fascia). The study concluded that while indicators of high intensity pain were not found, pain should be evaluated and analgesics should be administered generously.[62]

Bisgaard thue et al. did prospective research on 150 patients to determine the parameters and predict pain following laparoscopic cholecystectomy. They investigated the link of preoperative nociceptive stimulation dyspepsia, biliary symptoms in the patient, intraoperative variables, and demographic information and early postoperative pain. In the early post-operative period, pain was measured using a visual analogue scale and a verbal rating scale, as well as by tracking daily analgesic needs. Individuals' levels of discomfort differed greatly. The most prevalent form of pain was incisional pain, followed by visceral discomfort and finally shoulder pain. Pain generation was influenced by preoperative

neuroticism, sensitivity to cold pressor-induced pain, and age. They stated that the goal of laparoscopic cholecystectomy should be to reduce incisional pain.[63]

Using a double-blinding prospective approach, Fredman b et al. investigated the influence of residual pneumoperitoneum on post-laparoscopic cholecystectomy pain intensity in 40 healthy individuals. The patients were separated into two groups: those who aspirated actively and those who did not (NAA). Postoperative pain was assessed hourly over a 4-hour period using a visual analogue scale (VAS) and a patient-controlled analgesia (PCA) device. NAA patients required considerably more morphine than AA patients within the first postoperative hour. As a consequence, it was determined that residual pneumoperitoneum plays a role in the pathogenesis of postoperative discomfort following laparoscopic cholecystectomy.[64]

To examine the impact of gender in post-operative discomfort following laparoscopic cholecystectomy, Uchiyama k et al included 100 patients having laparoscopic cholecystectomy without intraoperative problems. Female patients had higher vas ratings than male patients, meaning that pain after LC was more acute in female patients during the early postoperative period, and patients with high VAS values used analgesics more often.[65]

Davides et al. conducted a study to evaluate the use of low-pressure pneumoperitoneum for routine laparoscopic cholecystectomy and reported that the procedure can be performed safely and comfortably at low intra-abdominal pressure, which may contribute to the procedure's safety and comfort while also avoiding the potentially dangerous hemodynamic effects of pneumoperitoneum.[66]

Viswanathan V et al (2016)[67] evaluated 100 cases over a 2 years period for the incidence of biliary injury with the use of Strasberg CVS technique at Indraprastha Apollo Hospital, New Delhi . Morbidity was 2% (1 patient) in group 1 and 4% in group 2 (2 patients). The shorter operative times

were due to increased confidence with the technique, which probably made the surgeon feel more secure, both with inflamed and non-inflamed anatomy. The mean age of the study population was 36.50 years, with the range of 10 to 60 years in this study. The total number of male patients was 52(52%) while the number of female patients was 48 (48%) with M:F ratio being 1.10: 1. abdominal pain was the main symptom followed by fever and then nausea/vomiting. Ultrasound findings included -probe tenderness in 15, single calculi 43, multiple 41, gallbladder sludge in 11 and empyema in 3 and peri gallbladder collection in 2 patients.

Litomi T et al. conducted retrospective research to determine the incidence of PONV following laparoscopic cholecystectomy. Patients were divided into two groups: laparoscopy (101 patients) and laparotomy (101 patients) (101 patients). The bulk of the variables that potentially impact the occurrence of PONV were not statistically different across the groups, according to the findings of the study. PONV was found in 25.7 percent of laparoscopic procedures and 18.8 percent of laparotomy procedures. The researchers came to the conclusion that laparoscopic cholecystectomy increases the risk of PONV in the early postoperative period, most likely owing to residual peritoneal stretching and irritation, with a higher risk in female and obese patients.[68]

Liberman et al. conducted a study to assess the efficacy of ondansetron given at the induction of anaesthesia in patients scheduled for ambulatory laparoscopic cholecystectomy. They found that ondansetron at induction was highly effective in reducing postoperative nausea and vomiting in patients undergoing ambulatory laparoscopic cholecystectomy and should become the standard.[69]

To estimate a patient's risk of postoperative nausea and vomiting, Apfel CC et al conducted a comprehensive analysis of prospective trials (PONV). Female gender, history of PONV or motion sickness, nonsmoker, younger age, duration of anaesthesia with volatile anesthetics, and

postoperative opioids were found to be the most reliable independent predictors of PONV in 22 studies.[70]

Cepeda MS et al. conducted a study to determine the effect of gender on pain perception, morphine consumption and morphine analgesia after surgery. They designed a prospective cohort study and included 423 women and 277 men who emerged from general anesthesia after surgical procedures and who reported pain intensity of >or=5 on the 0-10 numeric rating scale (NRS). They concluded that women have more intense pain and require 30% more morphine to achieve a similar degree of analgesia compared with men.[71]

Kazuhisha uchiayama et al. aimed to investigate the appropriateness of inserting an intraperitoneal drainage tube after laparoscopic cholecystectomy (LC), based on postoperative pain and clinical courses. The conclusion of the study was when sex-stratified changes in mean VAS scores were compared females had more pain than their male counterparts at 24 h (P = 0.030). Postoperative pain was intensified by the insertion of a drainage tube after LC. This tendency was stronger in women.[72]

Yoshitaka fujji et al conducted a study to review the utility of antiemetics in the prevention and management of PONV after laparoscopic cholecystectomy. Postoperative nausea and vomiting (PONV) are distressing and frequent adverse events of anesthesia and surgery, with a relatively high incidence after laparoscopic cholecystectomy. They concluded that combination antiemetic therapy is often effective for the prevention of PONV following laparoscopic cholecystectomy. The efficacy of a combination of serotonin receptor antagonists (ondansetron and granisetron) and droperidol is superior to monotherapy with a serotonin receptor antagonist or droperidol. Similarly, adding dexamethasone to ondansetron or granisetron improves antiemetic efficacy in PONV. Knowledge regarding antiemetics is necessary to completely prevent and

treatment of PONV in patients scheduled for laparoscopic cholecystectomy.[73]

Parra M et al conducted a retrospective cohort study in 370 patients who had laparoscopic cholecystectomy and discovered that PONV was more common in women at 1 and 6 hours after surgery (p 0.01). 35 women and 11 men required rescue antiemetics (p = 0.008). They concluded that early postoperative pain, nausea, and vomiting following LC were more common in women, who required analgesic and antiemetic rescue medication more frequently.[74]

Kulacoglu H et al. conducted a prospective study in patients in whom laparoscopic and open cholecystectomy were performed. They found out that postoperative micturition difficulty developed in 10 patients of these patients, 9 could void with helping measures, and only 1 needed catheterization. Only 1 patient who underwent laparoscopic surgery required catheterization (0.7%). The open approach caused a higher incidence of postoperative micturition difficulty than did the laparoscopic approach. They concluded that Urinary retention is a rare complication after elective cholecystectomy. Helping measures are very effective and should be tried before inserting a urethral catheter.[75]

Pomaz J. et al. described Post Operative Urinary Retention (POUR) is the inability to urinate after a surgical procedure despite having a full bladder. They advised that treatment of POUR includes initiation of selective alpha blockade (i.e., tamsulosin) and bladder decompression with either an indwelling catheter or intermittent catheterization. Patients should not be kept in the hospital specifically to await a trial without catheterization.[76]

Gurer A et al. investigated the relationship between the placement of a drain in an inflamed and non-inflamed gallbladder retrospectively. There was no correlation found between the presence of a drain after laparoscopic cholecystectomy and the presence of postoperative fluid collection. they concluded that in patients who do not have any

complications, it is not necessary to place a drain to prevent fluid collection.[77]

Olsen et al.[67] enrolled three hundred and seven in the study to monitor the occurrence of PUR and to identify the relationship between risk factors and the development of PUR. Defining PUR as >300 mL in the bladder with the inability to urinate, the study showed that 28.7% of the patients had PUR at arrival to the recovery ward. The study showed a positive correlation between patients with ascending age, rising *anaesthesia* duration, regional anaesthesia (RA) and developing PUR.PUR occurred in half of the patients with diabetes and approximately half of the patients treated with ephedrine. Furthermore, the type of surgery had significance, as considerably more patients with plastic and orthopedic surgery developed PUR. On the other hand, the study showed no correlation between subjective symptoms, e.g. like a strong desire to void, and the occurrence of PUR. The results highlighted the necessity for greater attention to screening patients for POUR.[78]

Another comparative study was conducted by Mohammad Zarin et al.[79] on 438 patients who presented to Surgical Out-Patient Department (OPD) of Khyber Teaching Hospital from July 2015 to June 2016. Patients were divided into two groups. Group-A in which laparoscopic cholecystectomy was done using infundibular while in Group-B, CVS technique was utilized. Two groups were compared for operating time and Bile duct injury. The operative time was significantly reduced for Laparoscopic cholecystectomy using critical view of safety technique (50 mins vs. 73 mins). Minor leaks were comparable (0.5% vs. 0.9%) but there was a significant difference in major leaks between the two techniques (0.5% vs. 1.4%).

Bulent K et al. in 2017[80] conducted a study to determine the importance of critical view of safety techniques in laparoscopic cholecystectomy. A total of 120 patients were included in the study, between January 2015 to March 2016. Hydrodissection was performed for cases presenting with

severe adhesions or cholecystitis. A critical view of safety was performed for all patients undergoing the procedure for isolation of cystic duct and cystic artery with cystic plate dissection. A total of 81 (67.5%) female and 39 (32.5%) male patients succesfully underwent surgeries following the critical view of safety and hydrodissection technique. Acute/chronic cholecystitis, or severe adhesions in the surgical field, were detected in 34 (28.3%) patients. There were no intraoperative or postoperative biliary complications. Wound infection was detected in 5 (4.1%) patients. All patients were discharged on either the first, second or third postoperative day.

In 2011, Nereo vettoretto et al.[81] conducted a retrospective cohort study in which they applied and compared critical view of safety triangle approach with the infundibular approach using 174 patients and highlighted that no difference occurred in terms of morbidity and outcome; significant differences were found in operative time, favoring the critical view of safety approach in every stage of gall bladder disease with minor significance in acute cases. It was suggested that this technique is the gold standard technique for resident teaching, because it has a similar rate of biliary and hemorrhagic complications but has a shorter operative time, builds confidence and is a simple standardized method both for complicated and uncomplicated gall bladder lithiasis.

Ajay Kumar et al. [82] conducted a prospective study in 75 patients who underwent laparoscopic cholecystectomy .50 percent of the patients belonged to the age group of 30 to 50 years. Mean age of the patients of the present study was 48.6 years. 80 percent of the patients of the present study were females, while the remaining 20 percent were males. Pain was the most common clinical symptom encountered in patients in the present study found to be present in 100 percent of the patients. Dyspepsia and vomiting were the next in number found to be present in 46.67 percent and 5.33 percent of the patients. Aberrant anatomy was found to be present in 2 patients, whereas it was absent in 73 patients. Spillage was

found to be present in 25.33 percent of the patients, while it was absent in 74.67 percent of the patients. Critical view of safety was achieved in 100 percent of the patients of the present study. Aberrant anatomy was encountered only in two cases. Those cases were converted into open cholecystectomy. Mean duration of procedure in the present study was 59.45 minutes.

Kwon A.H [83] et al. conducted a study to determine the role of laparoscopy in the treatment of Mirizzi Syndrome in which they enrolled 2012 patients undergoing laparoscopic cholecystectomy of which 24 patients were diagnosed as Mirizzi Syndrome. they concluded that MS I with a visualized cystic duct can be considered to be an indication for laparoscopic cholecystectomy.

Ashish dey et al.[84] conducted a study to determine the effect of low-pressure pneumoperitoneum and duration of surgery in laparoscopic cholecystectomy on postoperative shoulder tip pain. A total of 100 patients were enrolled into the study. Shoulder tip pain was found to be most at 24 h and gradually decreased thereafter. They concluded that shorter duration of surgery was unrelated to incidence of shoulder tip pain after laparoscopic cholecystectomy.

Wynd CA et al. designed a study to identify factors contributing to postoperative urinary retention in patients undergoing major surgeries and concluded that post-operative urinary retention can be due to various factors including a history of postoperative urinary problems, advanced age, the total amount of fluid replacement over a 24-hour postoperative period, type of anesthesia, pain management medications and the route and length of medication administration.[85]

Bellville et al. conducted a study to assess the factors related to post operative nausea and vomiting in 3700 patients and concluded that women have greater preponderance to develop PONV. The incidence of PONV was also found to increase in long duration of anesthesia and with intraabdominal surgeries.[86]

Shaheed M et al. (2016)[87] compared critical view of safety technique of laparoscopic cholecystectomy in 250 patients with previously performed 250 patient of laparoscopic cholecystectomy using infundibular technique of dissection. The Incidence of bile duct injury in infundibular technique was (1.6%), while in critical view of safety technique the incidence was 0% which is statistically significant ($P<0.05$). Critical view of safety technique in laparoscopic cholecystectomy had reported a significant effect in preventing bile duct injury in comparison to infundibular technique with comparable time of surgery.

MATERIAL AND METHOD

This prospective study was conducted in 267 patients presenting to the Department of General Surgery, Dayanand Medical College and Hospital, Ludhiana taken up for Laparoscopic cholecystectomy, during the period of 1st January 2020 to 31st December 2020 after approval of the plan by the Ethical Committee of the institute.

Source of Data

The study was conducted on patients who underwent laparoscopic cholecystectomy in surgery department of DMCH, Ludhiana. Their medical records during this time frame were collected and reviewed. All the available medical records and radiographs were studied and evaluated according to the need of the study.

METHOD OF COLLECTION OF DATA

Patients undergoing laparoscopic cholecystectomy in Dayanand Medical College and Hospital, Ludhiana after proper consent were enrolled in study. The data was collected by personal interview and from investigations done on routine basis.

Inclusion criteria:

Patient undergoing elective laparoscopic cholecystectomy

- Patient diagnosed with
  Cholelithiasis with symptoms
  Gall bladder polyps
  Chronic cholecystitis
- Planned cholecystectomy (not simultaneous other operations)
- Patients giving written informed consent for enrollment in the study

Exclusion Criteria:

Patients not willing to be enrolled in the study

Patients planned for open cholecystectomy

Duration of study: 1 year

Outcome: 1. To study the incidence of the immediate complications after laparoscopic cholecystectomy

2. To correlate any aggravating or relieving factors with the immediate complications of laparoscopic cholecystectomy

Statistical analysis:

Data was described in terms of range; mean ±standard deviation (± SD), frequencies (number of cases) and relative frequencies (percentages) as appropriate. All statistical calculations will be done using SPSS (Statistical Package for the Social Science) SPSS 21 version statistical program for Microsoft Windows.

OPERATIVE PROCEDURE OF LAPAROSCOPIC CHOLECYSTECTOMY-

ANAESTHESIA – General anaesthesia with endotracheal intubation.

Prophylactic antibiotic (3^{rd} generation cephalosporin) was administered at the time of induction of anaesthesia.

After taking informed consent and induction of general anaesthesia, mopping and draping was done from nipple to mid-thigh in supine position. Abdomen was palpated to rule out any intra-abdominal masses. Along the inferior crease of umbilicus, the initial 10mm port was placed using either Veress Needle or Hasson's method of creation of pneumoperitoneum. After adjusting white balance and focus, the 30^{o} laparoscope was introduced into the peritoneal space. A general examination of the intra abdominal organs was done and any trocar-associated vascular and visceral injury was ruled out. Under direct vision, second 10mm trocar port was placed in the epigastrium, about 2 cm below xiphoid with its entrance point being just right to the falciform ligament. A 5mm trocar port was placed in right upper quadrant near the mid clavicular line under vision. Another 5mm trocar port was inserted under vision laterally in right flank almost at the level of umbilicus on anterior axillary line. Then the patient was placed in a mild (10-15 degrees) Reverse Trendelenburg position with slight rotation of the patient to left (i.e. right side up) for proper visualization of gall bladder region.

The apex of the fundus of the gallbladder was grasped with a ratcheted forceps through the lateral port and cephalad traction was given in direction of the right shoulder of the patient. Then the infundibulum of the gallbladder was grasped and infero-lateral traction was given to open the Calot's Triangle i.e. with the traction, cystic duct no longer lied parallel to common hepatic duct. The dissection was then carried along the infundibulum on the posterior and anterior surfaces to expose the base of the gall bladder and Calot's triangle was cleared of all fibro fatty tissue. With continued dissection, cystic duct and artery were exposed and each structure was exposed circumferentially. Then an attempt was made in each case to create and achieve critical view of safety.

This process involved dissection of the infundibulum of the gall bladder and continuation of the dissection by taking down the cystic plate and then the lower third of the gall bladder was separated from its attachments to the liver. Then, the two tubular structures entering the gall bladder i.e. cystic duct and cystic artery were cleaned of all extraneous material. When gall bladder infundibulum was rotated laterally and then medially, only two structures i.e. cystic duct and artery were entering the gall bladder and liver on the opposite side was visible through the open space around cystic duct and cystic artery.

The inferior limit of dissection was maintained at the line between epigastric port and Rouvier's sulcus.

Then cystic artery and cystic duct were clipped and cut. Then the gall bladder was separated from liver bed while maintaining hemostasis. The specimen was the brought out from the epigastric port and sent for histopathological examination. Hemostasis was ensured and the sub hepatic drain was placed. Closure of all port incisions was done.

Intra operative findings were observed and recorded in view of –

- Delineation of anatomy of Calot's triangle
- Presence of adhesions, empyema
- Presence of Mirizzi syndrome

- Presence of cholecystogastric /duodenal fistula
- Presence of contracted gall bladder
- Presence of gangrenous gall bladder
- Conversion of laparoscopic to open cholecystectomy

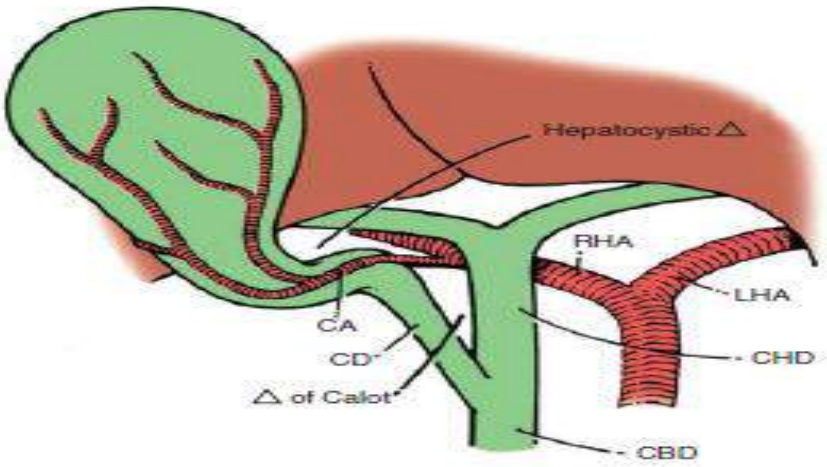
Then in the immediate post operative period, patients were observed and monitored for any complications and record was maintained in view of

- Drain output – Amount and type (Serous / Bile)
- Abdominal distension
- Shoulder Pain
- Post Operative Nausea and Vomiting
- Post Operative Urinary Retention

The data was collected and observations were made. After careful analysis and discussion, the conclusion of this prospective study was made.

CRITERIA FOR ACCOMPLISHMENT OF CRITICAL VIEW OF SAFETY

1. Calot's triangle should be completely free of fat and fibrous tissue. It does not require that the common bile duct be exposed.
2. The lowest one third part of the gall bladder should be separated from the cystic plate. The cystic plate referred to as the liver bed of the gall bladder is part of the plate/ sheath system of the liver.
3. The two structures and only 2, should be seen entering the gall bladder.

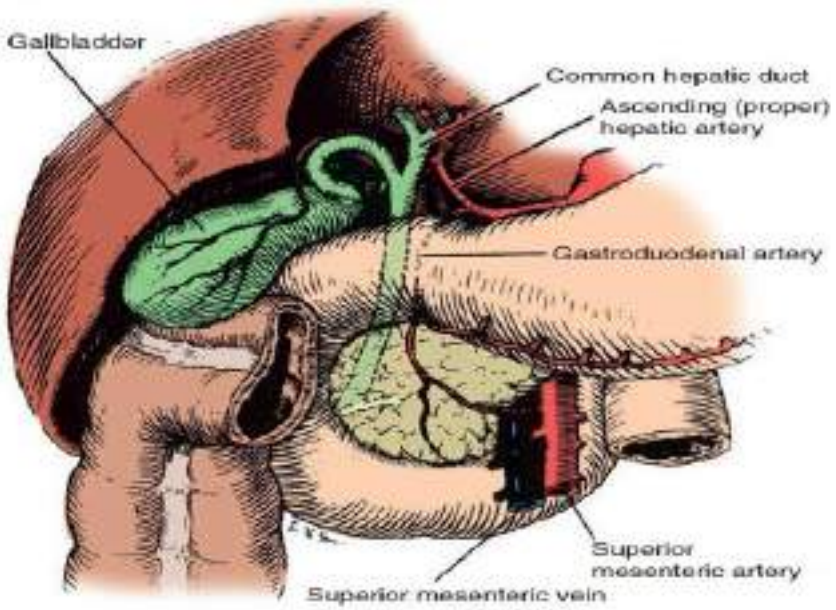


PICTURE 1: FIGURE SHOWING HEPATOCYSTIC TRIANGLE AND CALOT'S TRIANGLE [88]

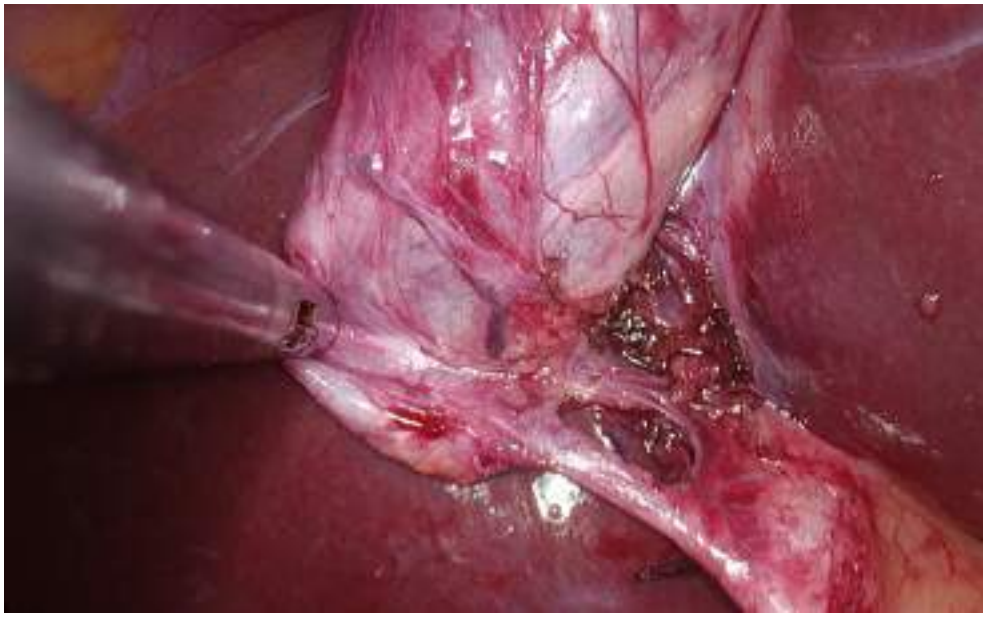
CA: CYSTIC ARTERY, CD: CYSTIC DUCT, RHA: RIGHT HEPATIC ARTERY

LHA: LEFT HEPATIC ARTERY, CHD: COMMON HEPATIC DUCT

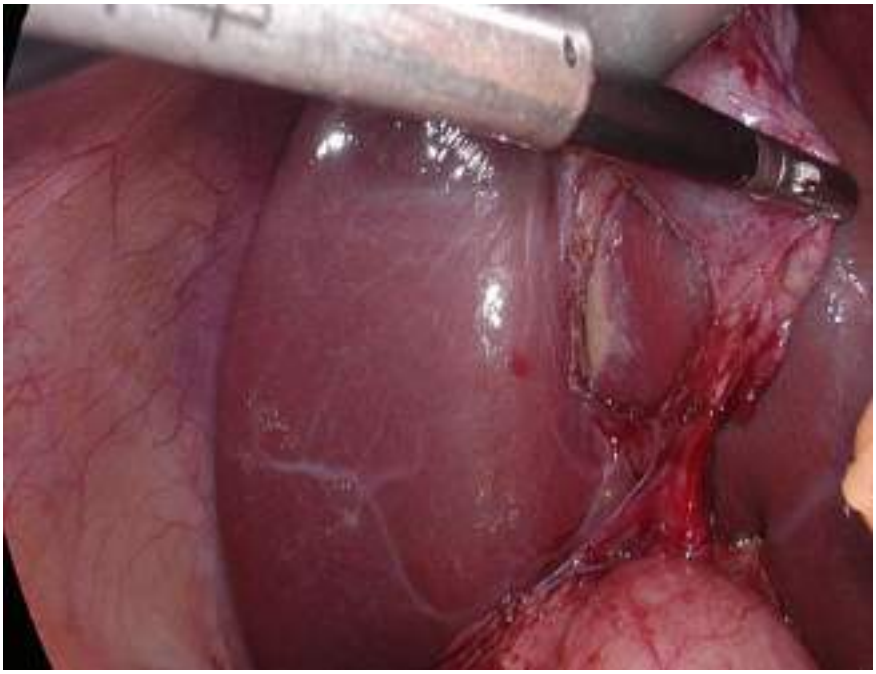
CBD: COMMON BILE DUCT



PUCTURE-2 FIGURE SHOWING ANATOMIC RELATIONSHIP OF GALL BLADDER WITH SURROUNDING STRUCTURES[89]



PICTURE-3 FIGURE SHOWING CREATION OF ANTERIOR AND POSTERIOR WINDOWS IN CALOT'S TRIANGLE AND DISSECTION OF CALOT'S TRIANGLE.



PICTURE-4: FIGURE SHOWING VISIBILITY OF PART OF LIVER THROUGH THE PERITONEAL WINDOWS

PICTURE-5 A): FIGURE SHOWING INTRA OPERATIVE CRITICAL VIEW OF SAFETY

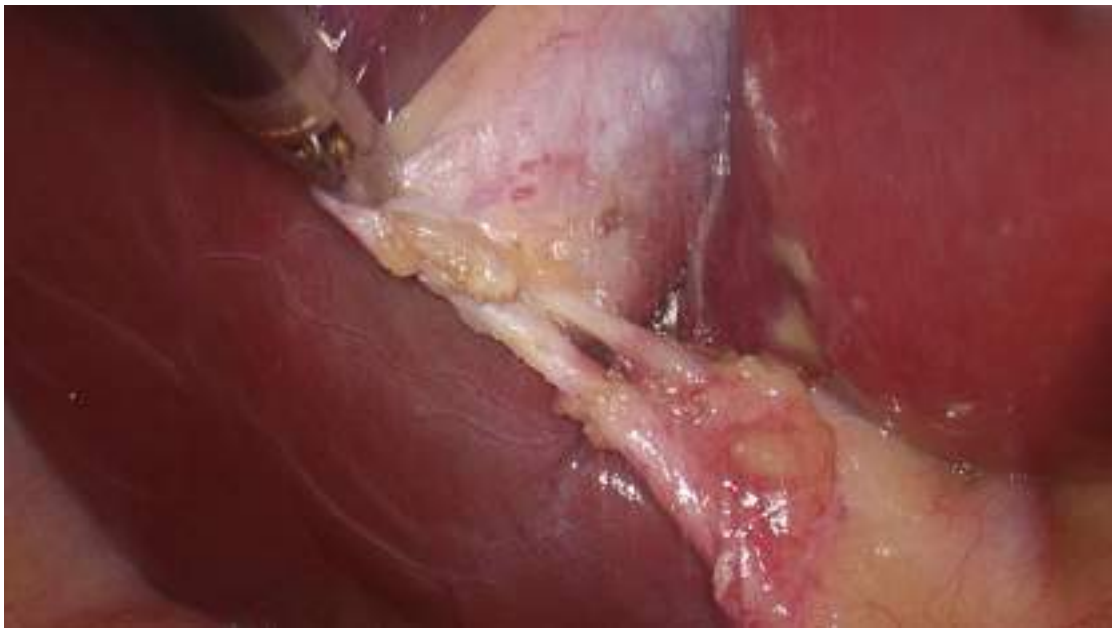


FIGURE 5 B): FIGURE SHOWING ONLY TWO STRUCTURES ENTERING THE GALLBLADDER

OBSERVATIONS AND RESULTS

PATIENT CHARACTERISTICS

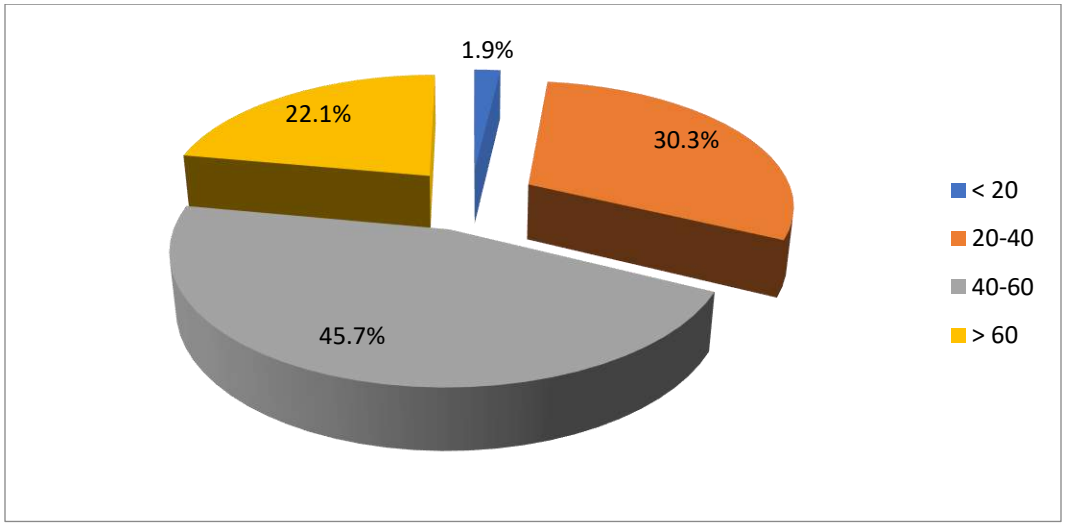
In the present prospective study, 267 patients were admitted for laparoscopic cholecystectomy in the Department of General Surgery, DAYANAND MEDICAL COLLEGE AND HOSPITAL, LUDHIANA and an attempt was made to evaluate immediate post operative complications after laparoscopic cholecystectomy.

A) Pre operative profile

TABLE 1: AGE DISTRIBUTION OF PATIENTS (n= 267)

Age	No. of cases	Percentage
< 20	5	1.9%
20-40	81	30.3%
40-60	122	45.7%
> 60	59	22.1%

FIGURE 1: AGE DISTRIBUTION OF PATIENTS (n= 267)

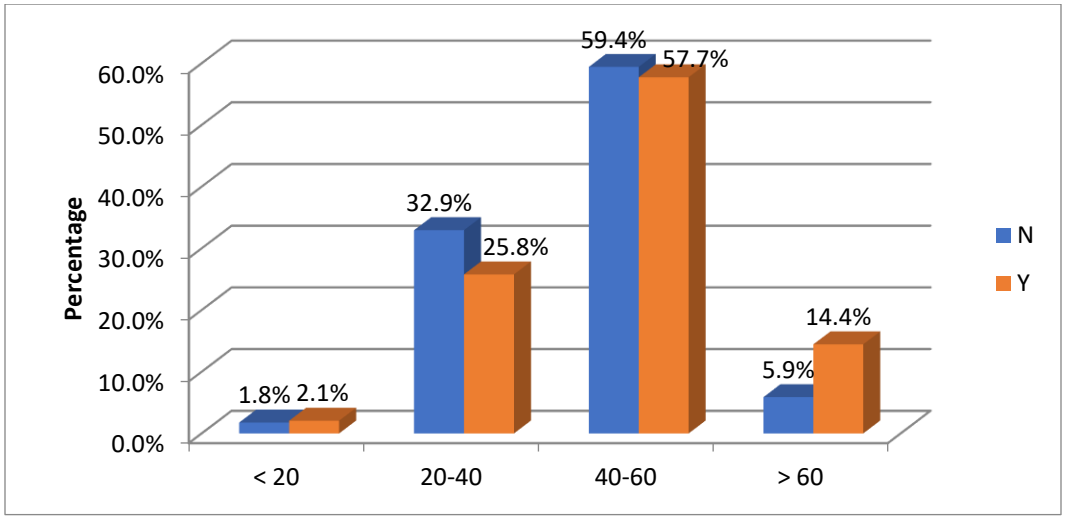


In this prospective study of 267 patients, the youngest patient was of 10 years and the oldest patient was of 87 years. Maximum number of patients were in the age group of > 40yrs (45.7%). The number of patients in the age group of less than 40 years were 86 (32.2%).

TABLE 2 –RELATIONSHIP OF AGE DISTRIBUTION OF PATIENTS WITH SHOULDER TIP PAIN (n=267)

		Shoulder Tip Pain				Total
		N		Y		
Age	< 20	3	1.8%	2	2.1%	5
	20-40	56	32.9%	25	25.8%	81
	40-60	101	59.4%	56	57.7%	157
	> 60	10	5.9%	14	14.4%	24

FIGURE 2 –RELATIONSHIP OF AGE DISTRIBUTION OF PATIENTS WITH SHOULDER TIP PAIN (n=267)

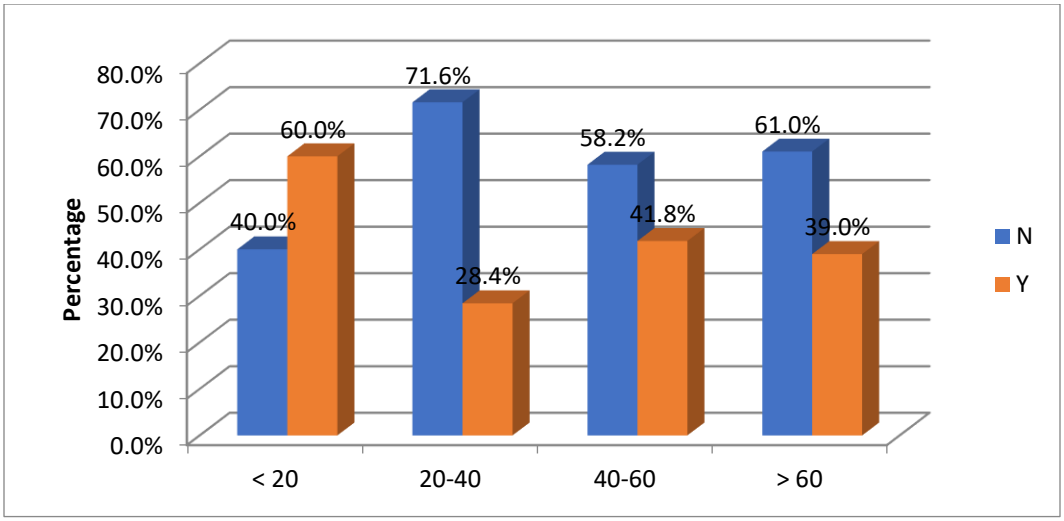


Incidence of shoulder tip pain in our study was 97 (36.3%). The maximum incidence of shoulder tip pain was in patients with age more than 40 years occuring in around 72.1 % patients (n = 70).

TABLE 3: RELATIONSHIP OF AGE DISTRIBUTION OF PATIENTS WITH PONV (n=267)

		PONV				Total
		N		Y		
Age	< 20	2	40.0%	3	60.0%	5
	20-40	58	71.6%	23	28.4%	81
	40-60	71	58.2%	51	41.8%	122
	> 60	36	61.0%	23	39.0%	59

FIGURE 3: RELATIONSHIP OF AGE DISTRIBUTION OF PATIENTS WITH PONV (n=267)

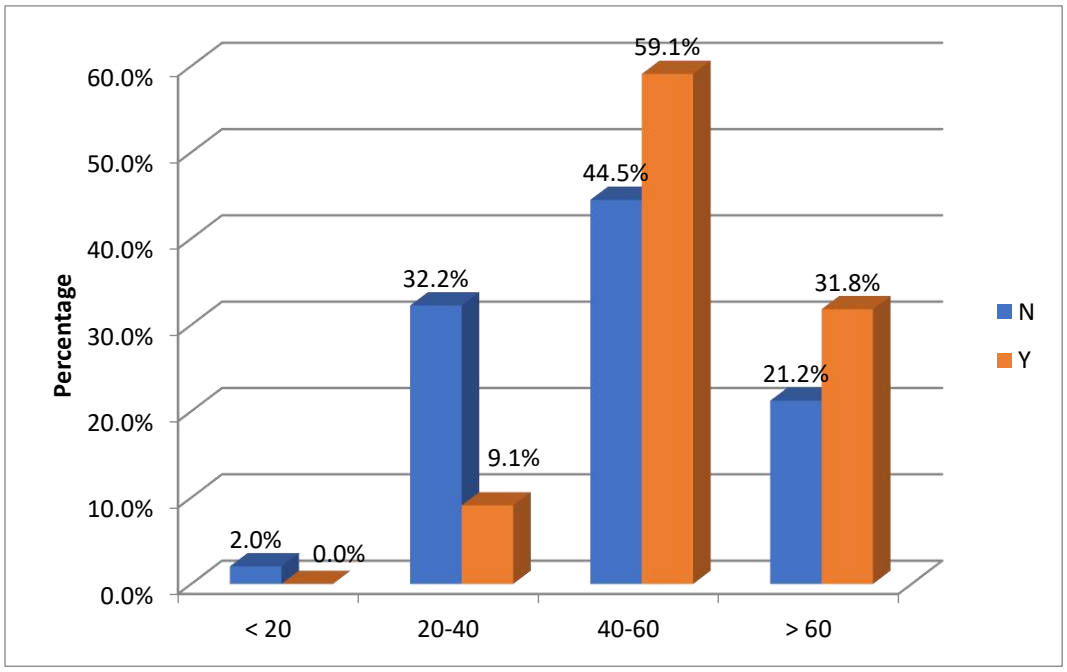


In our study incidence of PONV was found in 100 patients. Patients belonging to the group <20 years were most prone to develop PONV with incidence being equal to 60 % (n=3). In patients more than 60 years, 39% developed PONV (n=23).

TABLE 4: RELATIONSHIP OF AGE DISTRIBUTION OF PATIENTS WITH POST OPERATIVE URINARY RETENTION (n=267)

		Urinary Retention			
		N		Y	
Age Group	< 20	5	2.0%	0	0.0%
	20-40	79	32.2%	2	9.1%
	40-60	109	44.5%	13	59.1%
	> 60	52	21.2%	7	31.8%
Total		245	100.0%	22	100.0%

FIGURE 4: RELATIONSHIP OF AGE DISTRIBUTION OF PATIENTS WITH POST OPERATIVE URINARY RETENTION (n=267).

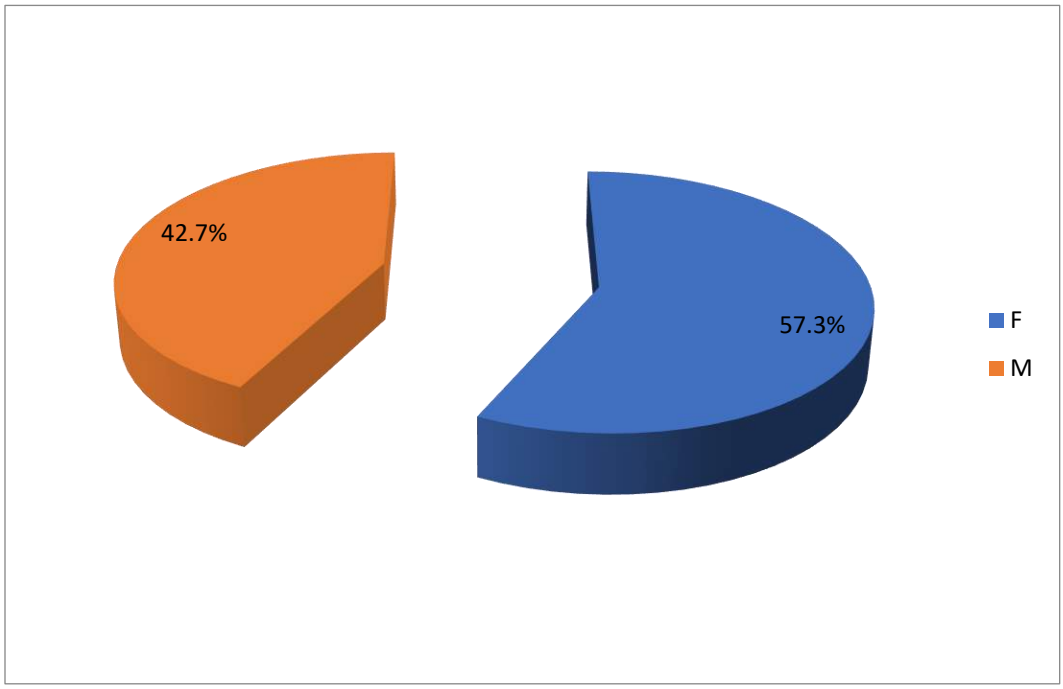


In our study the incidence of urinary retention was 8.2% (n=22) of which 90% patients were more than forty years old (n=20). In patients less than 20 years old no incidence of urinary retention was observed in our study.

TABLE 5: GENDER DISTRIBUTION OF PATIENTS (n=267)

Gender	No. of cases	Percentage
Female	153	57.3%
Male	114	42.7%
Total	267	100.0%

FIGURE 5: GENDER DISTRIBUTION OF PATIENTS (n=267)

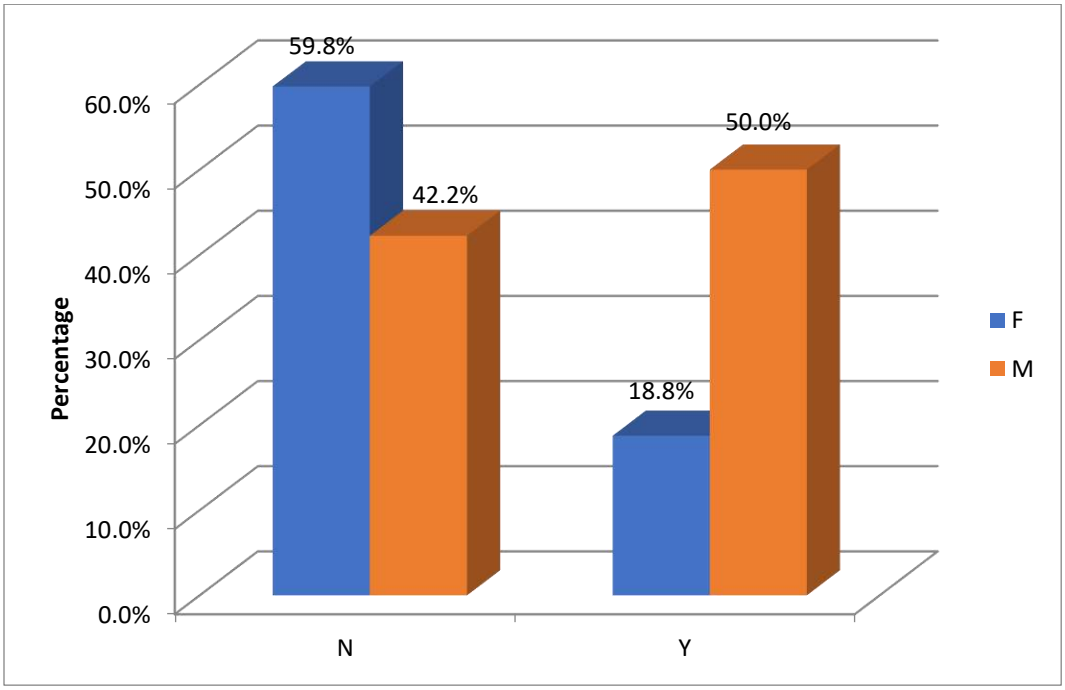


Out of 267 patients included in this study, 153 were females and 114 were males. The percentage of female patients included in this study was 57.3% and the percentage of male patients was 42.7%. In our study, cholelithiasis was found to be more common in females.

TABLE 6- ASSOCIATION OF GENDER OF THE PATIENT WITH NEED FOR CONVERSION

		Need For Conversion				Total
		N		Y		
Gender	Female	150	59.8%	3	18.8%	153
	Male	106	42.2%	8	50.0%	114

FIGURE 6- ASSOCIATION OF GENDER OF THE PATIENT WITH NEED FOR CONVERSION

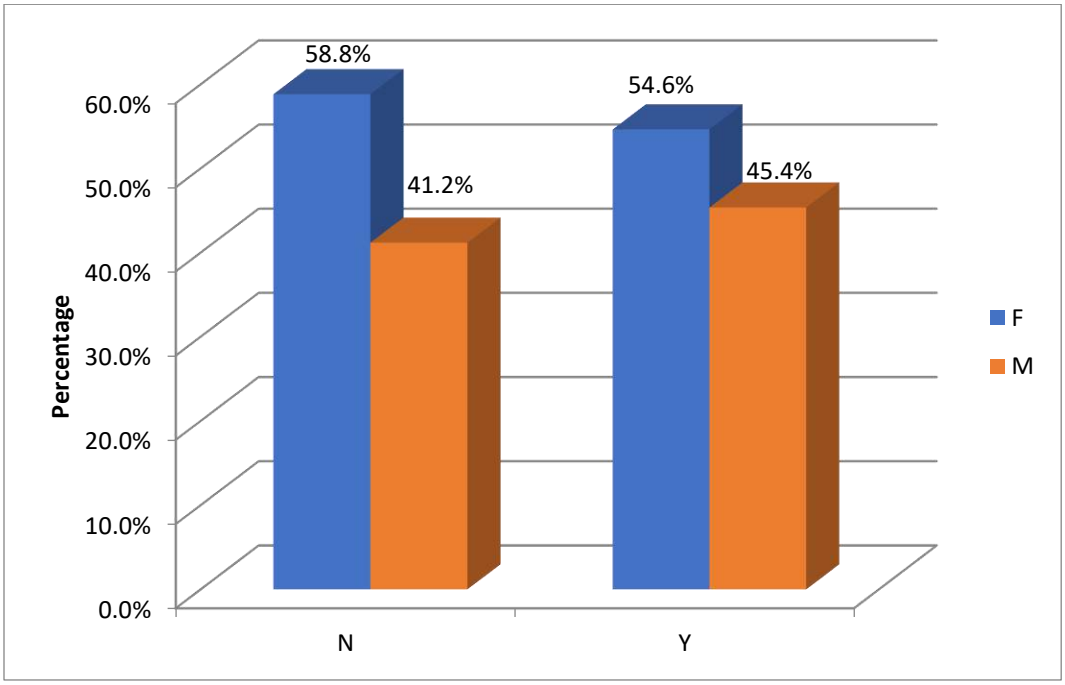


Out of 11 patients in whom need for conversion to open cholecystectomy was found 3 were female patients and 8 were male patients. Male gender is itself considered a risk factor for complicated cholecystitis due to various factors like late presentation of male patients with long history of recurrent attacks, more chances of aberrant anatomy and predisposition of male gender to adhesions between gall bladder and surrounding structures.

TABLE 7– ASSOCIATION OF GENDER OF THE PATIENT WITH SHOULDER TIP PAIN (n=97)

		Shoulder Tip Pain				Total
		N		Y		
Gender	Female(F)	100	58.8%	53	54.6%	153
	Male(M)	70	41.2%	44	45.4%	114

FIGURE 7 – ASSOCIATION OF GENDER OF THE PATIENT WITH SHOULDER TIP PAIN (n=97)

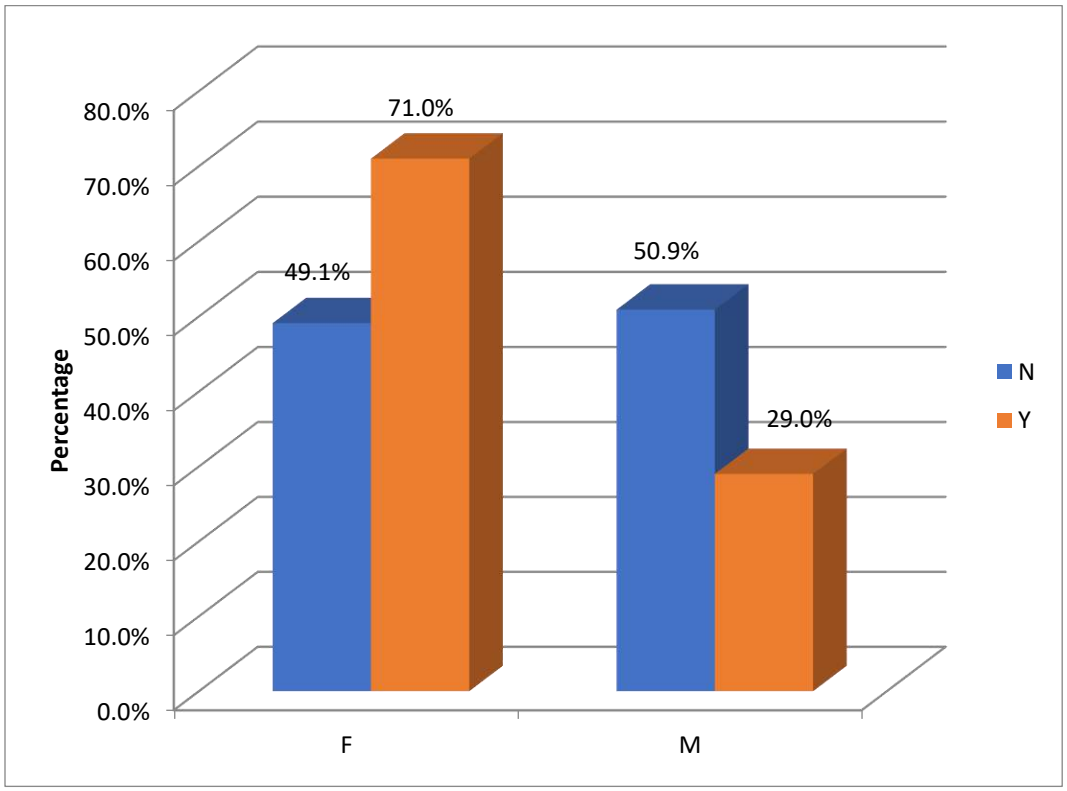


In our study the incidence of shoulder tip pain was 36.3 % (n=97). Amongst 97 patients who developed shoulder tip pain 53 were female (54.6%) and 44 were male patients (45.4%).

TABLE 8: ASSOCIATION OF GENDER OF PATIENT WITH PONV (n=100)

		PONV				Total
		N		Y		
Gender	Female	82	49.1%	71	71.0%	153
	Male	85	50.9%	29	29.0%	114

FIGURE 8: ASSOCIATION OF GENDER OF PATIENT WITH PONV (n=100)

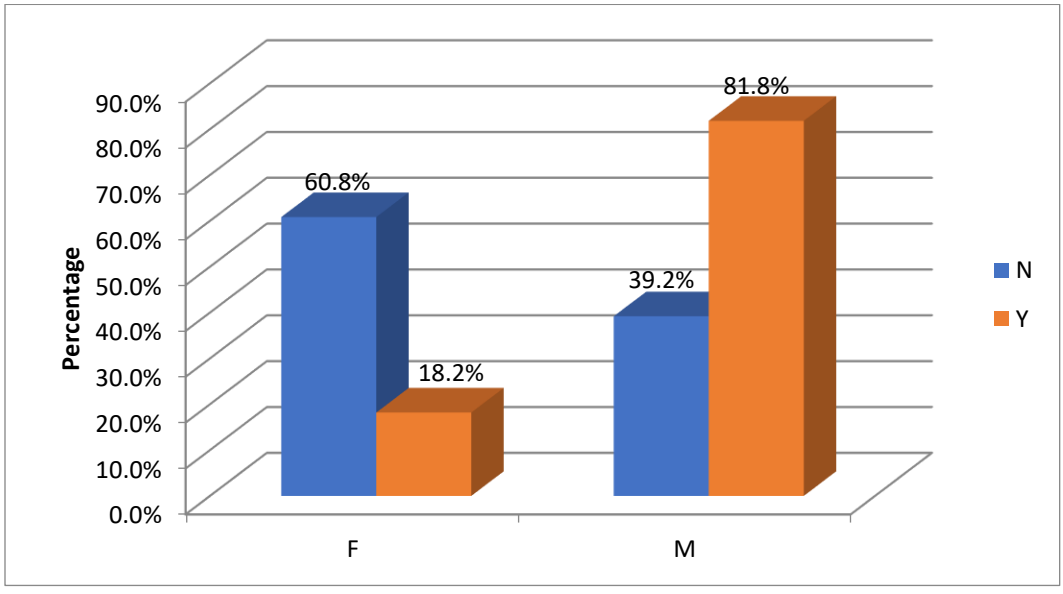


The incidence of PONV in our study was 37.4% of which were 71% (n=71) females and 29% (n=29) were males.

TABLE 9: ASSOCIATION OF GENDER WITH POST OPERATIVE URINARY RETENTION (n=22)

		Urinary Retention				Total
		N		Y		
Gender	Female(F)	149	60.8%	4	18.2%	153
	Male(M)	96	39.2%	18	81.8%	114
Total		245	100.0%	22	100.0%	267

FIGURE 9: ASSOCIATION OF GENDER WITH POST OPERATIVE URINARY RETENTION (n=22)

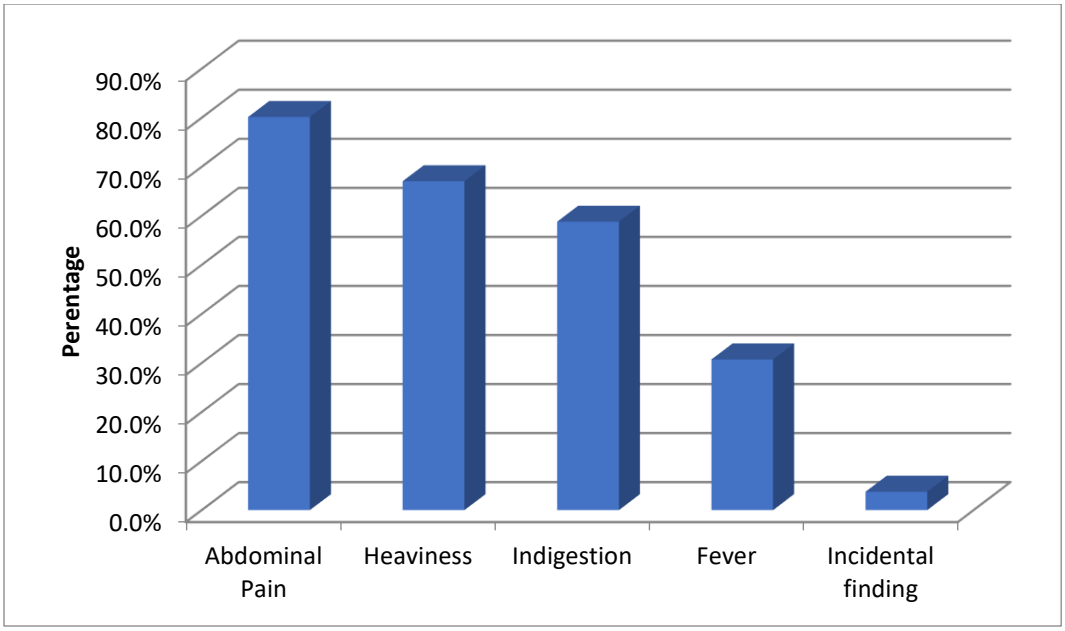


The incidence of urinary retention in our study was 8.2 %(n=22) involving 18 male (81.8%) patients and 4 female patients (18.2%).

TABLE 10: DISTRIBUTION OF PRESENTING COMPLAINTS (n=267)

	No. of cases	Percentage
Abdominal Pain	214	80.1%
Heaviness	179	67.0%
Indigestion	157	58.8%
Fever	82	30.7%
Incidental finding	10	3.7%

FIGURE 10: DISTRIBUTION OF PRESENTING COMPLAINTS (n=267)

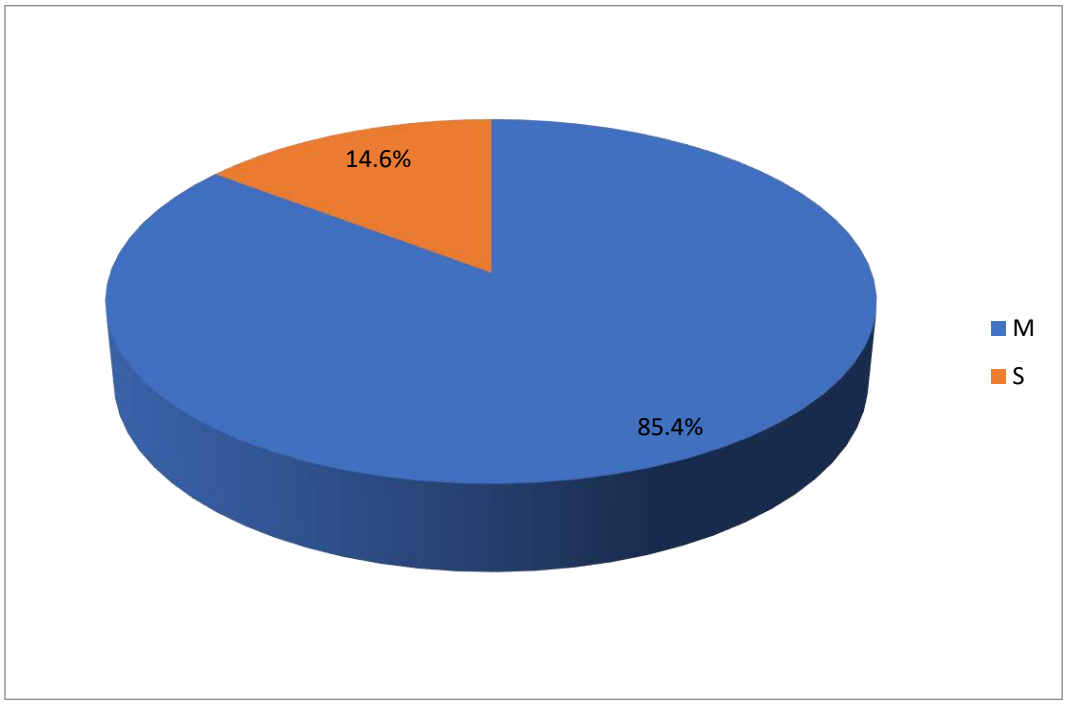


In this prospective study, it was observed that out of 267 patients, 214 patients presented with the complaint of pain abdomen, making it the most common presentation. Post prandial fullness was observed in 179 patients. Fever was observed in 82 patients. 10 patients out of 267 patients were diagnosed to have cholelithiasis incidentally on ultrasonography.

TABLE 11: CHARACTERSTIC OF STONE ON ULTRASONOGRAPHY

Ultrasound-No of Stones	No. of cases	Percentage
Multiple (M)	228	85.4%
Single (S)	39	14.6%
Total	267	100.0%

FIGURE 11: CHARACTERSTIC OF STONE ON ULTRASONOGRAPHY

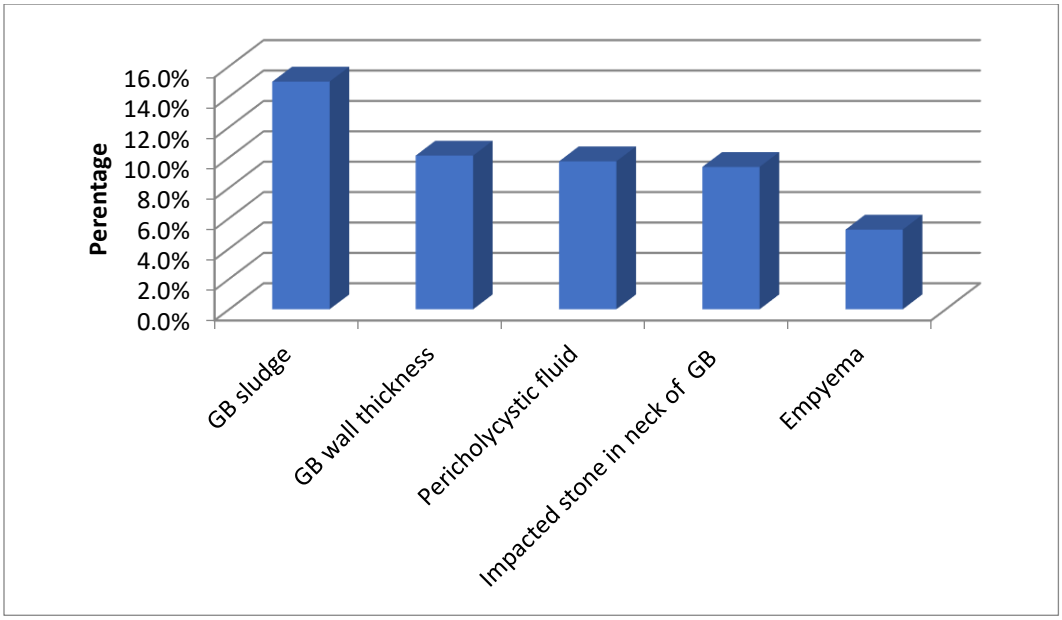


All the patients included in this study underwent radiological investigation in form of ultrasonography. It was observed that 228 patients (85.4%) had multiple gall stones while 39 patients (14.6%) had single gall stone. Multiple gall stones were more common than single gall stones.

TABLE 12: OTHER ULTRASONOGRAPHIC FINDINGS

Ultrasound	No. of cases	Percentage
Impacted stone in neck of GB	25	9.4%
Pericholycystic fluid	26	9.7%
GB Wall thickness	27	10.1%
GB Sludge	40	15.0%
Empyema	14	5.2%

FIGURE 12: OTHER ULTRASONOGRAPHIC FINDINGS



Gall bladder sludge was observed in 40 patients (15%). The wall of gall bladder was thickened in 27 patients (10.1%). The stone was impacted in the neck of gall bladder in 22 patients (9.4%). Pericholecystic fluid was observed in 26 (9.7%) patients and Empyema were observed in14 (5.2%) patients.

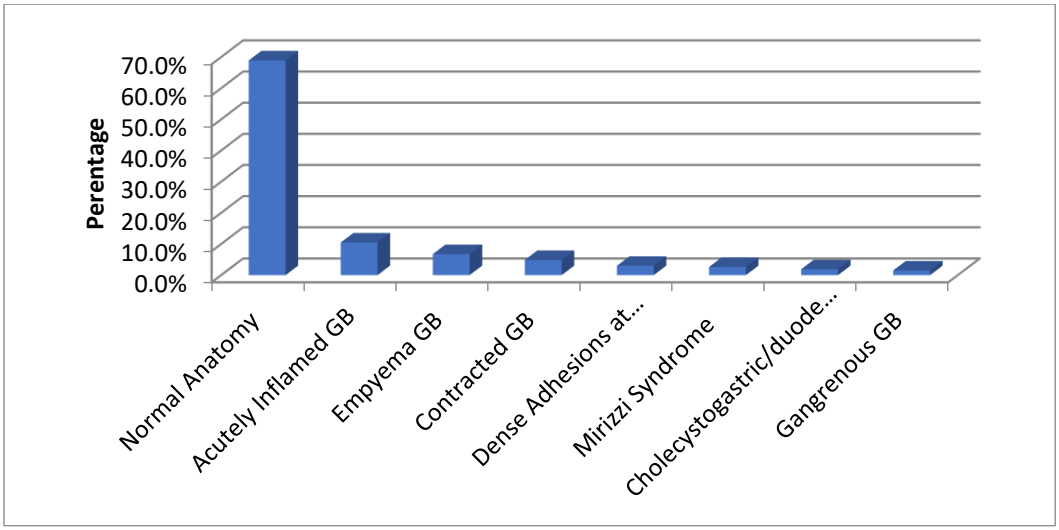
Multiple gall bladder stones were the most common find on ultrasonography. Amongst the other ultrasonographic finding the most common finding was GB sludge and the least common was empyema gall bladder.

B) Intraoperative profile

TABLE 13: INTRAOPERATIVE FINDINGS (n=267)

Intra operative findings	No. of cases	Percentage
Normal Anatomy	184	68.9%
Acutely Inflamed GB	28	10.5%
Empyema GB	18	6.7%
Contracted GB	13	4.9%
Dense Adhesions at Calot's Triangle	8	3.0%
Mirizzi Syndrome	7	2.6%
Cholecystogastric/duodenal Fistula	5	1.9%
Gangrenous GB	4	1.5%

FIGURE 13: INTRAOPERATIVE FINDINGS (n=267)

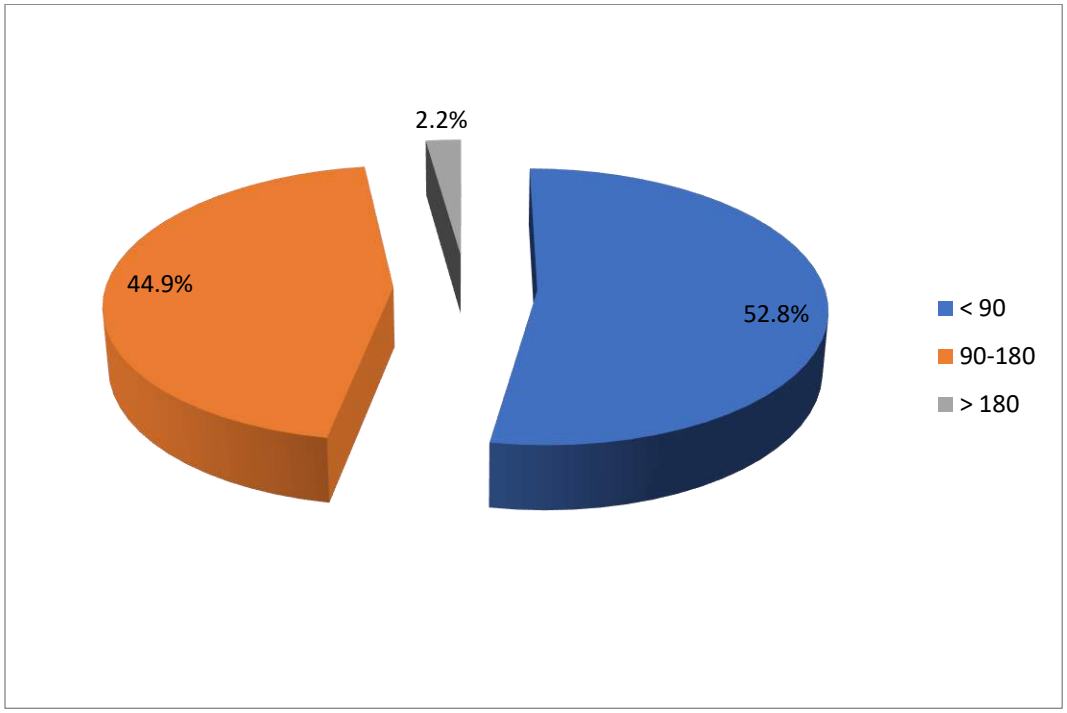


Intra operatively, 68.9 % (184) patients had normal anatomy. Other patients based on their intraoperative finding were taken as difficult laparoscopic cholecystectomy of which acutely inflamed gall bladder was the most common intraoperative finding found in 10.5% patients (n=28). Empyema gall bladder was found in 6.7% patients (n=18), contracted gall bladder in 4.9% patients (n=13), dense adhesions at calots triangle 3%(n=8), Mirizzi syndrome in 2.6%(n=7), cholecystogasrtic/duodenal fistula in 1.9% (n= 5) and gangrenous gall bladder in 1.5 % (n=4) patients.

TABLE 14: DURATION OF SURGERY (n= 267)

Duration Of Surgery (In minutes)	No. of cases	Percentage
< 90	141	52.8%
90-180	120	44.9%
> 180	6	2.2%
Total	267	100.0%

FIGURE 14: DURATION OF SURGERY (n= 267)

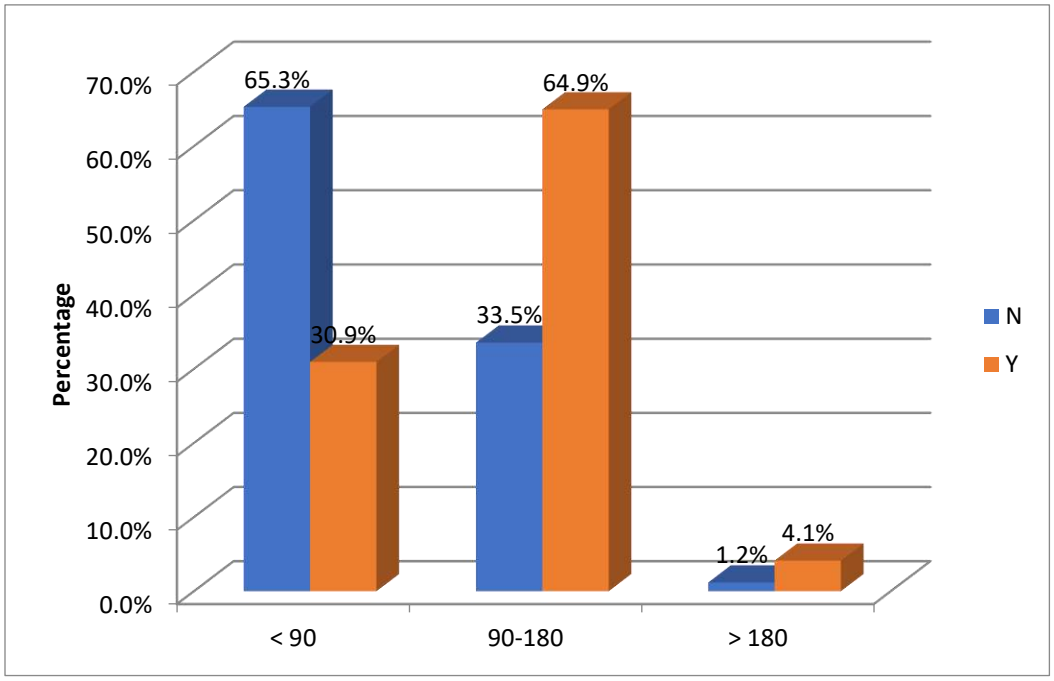


Mean duration of surgery in our study was found to be 94 minutes with majority of cases (52.8%, n= 141) being completed under 60 minutes. Only six cases, 2.2% took more than 120 minutes for completion.

TABLE 15: ASSOCIATION OF DURATION OF SURGERY WITH SHOULDER TIP PAIN

		Shoulder tip pain				Total
		N		Y		
Duration of surgery (In minutes)	< 90	111	65.3%	30	30.9%	141
	90-180	57	33.5%	63	64.9%	120
	> 180	2	1.2%	4	4.1%	6
Total		170	100.0%	97	100.0%	267

FIGURE 15: ASSOCIATION OF DURATION OF SURGERY WITH SHOULDER TIP PAIN

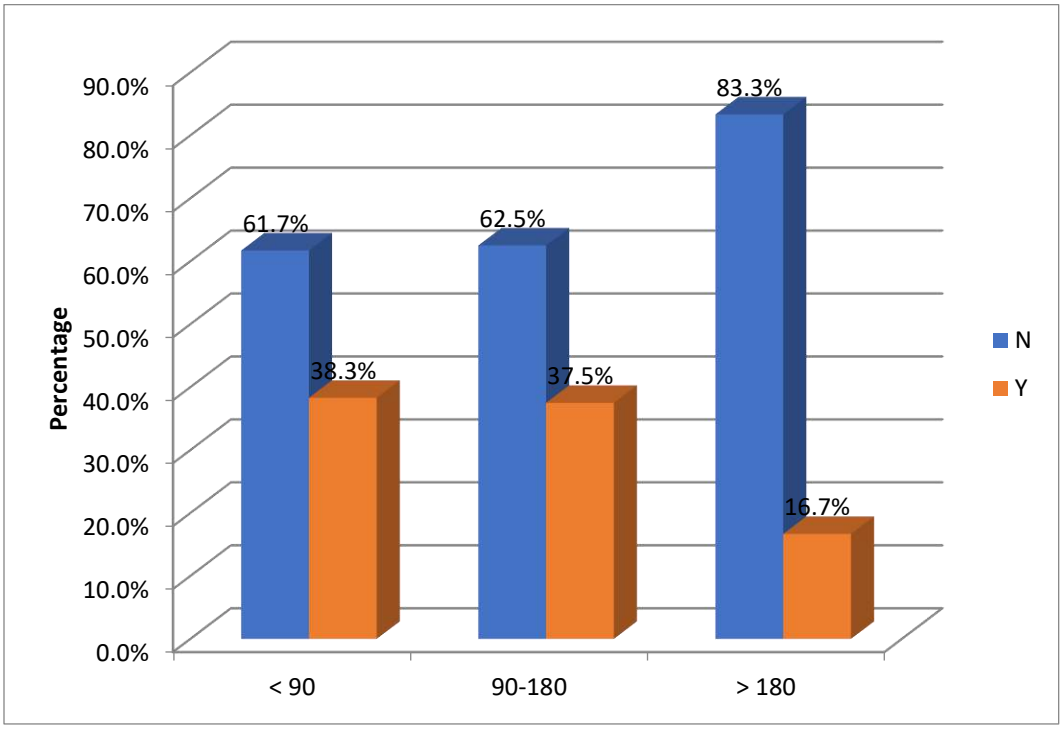


The incidence of shoulder tip pain in our study was 36.7% (n=97) of which 69% (n=67) patients developed pain in the shoulder when the duration of surgery was more than 90 minutes.

TABLE 16: ASSOCIATION OF DURATION OF SURGERY WITH PONV

		PONV				Total
		N		Y		
Duration Of Surgery	< 90	103	73.0%	38	27.0%	141
	90-180	64	53.3%	56	46.7%	120
	> 180	0	0.0%	6	100.0%	6
Total		167	62.5%	100	37.5%	267

FIGURE 16: ASSOCIATION OF DURATION OF SURGERY WITH PONV

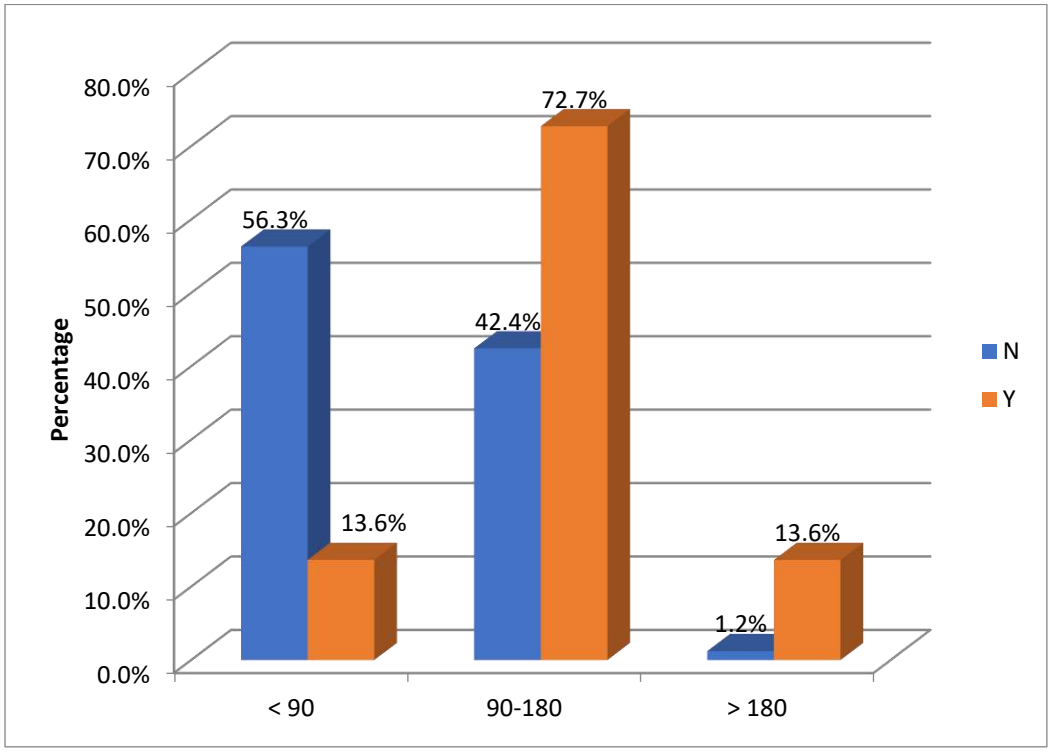


The relationship between duration of surgery and development of PONV in the postoperative period was studied. The incidence of PONV was of which patients had duration of surgery less than 90 minutes and had duration of surgery more than 90 minutes.

TABLE 17: ASSOCIATION OF DURATION OF SURGERY WITH POST OPERATIVE URINARY RETENTION

		Urinary Retention				Total
		N		Y		
Duration of surgery (In minutes)	< 90	138	56.3%	3	13.6%	141
	90-180	104	42.4%	16	72.7%	120
	> 180	3	1.2%	3	13.6%	6
Total		245	100.0%	22	100.0%	267

FIGURE 17: ASSOCIATION OF DURATION OF SURGERY WITH POST OPERATIVE URINARY RETENTION

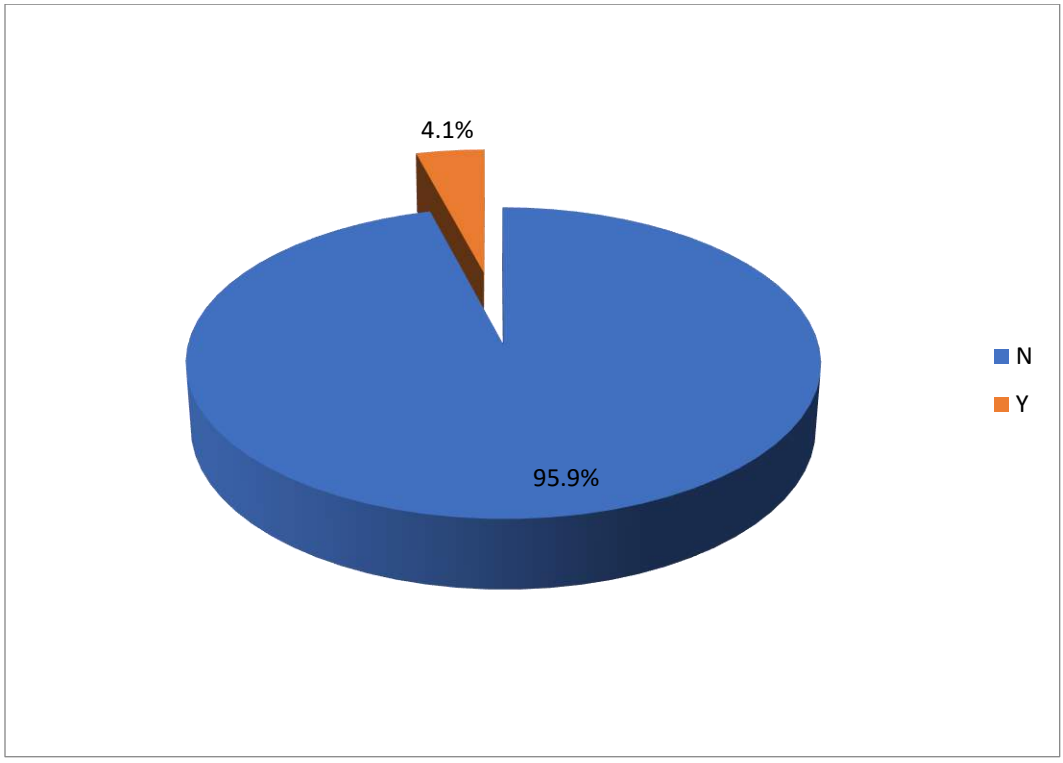


Of the 22 patients who developed post operative urinary retention, 19 patients (86.3%) had duration of surgery more than 90 minutes. In the patients 141 patients with duration of surgery less than 90 minutes only 3 patients (13.6%) developed post operative urinary retention.

TABLE 18: CONVERSION TO OPEN CHOLECYSTECTOMY (n=267)

Need For Conversion	No. of cases	Percentage
N	256	95.9%
Y	11	4.1%
Total	267	100.0%

FIGURE 18: CONVERSION TO OPEN CHOLECYSTECTOMY (n=267)

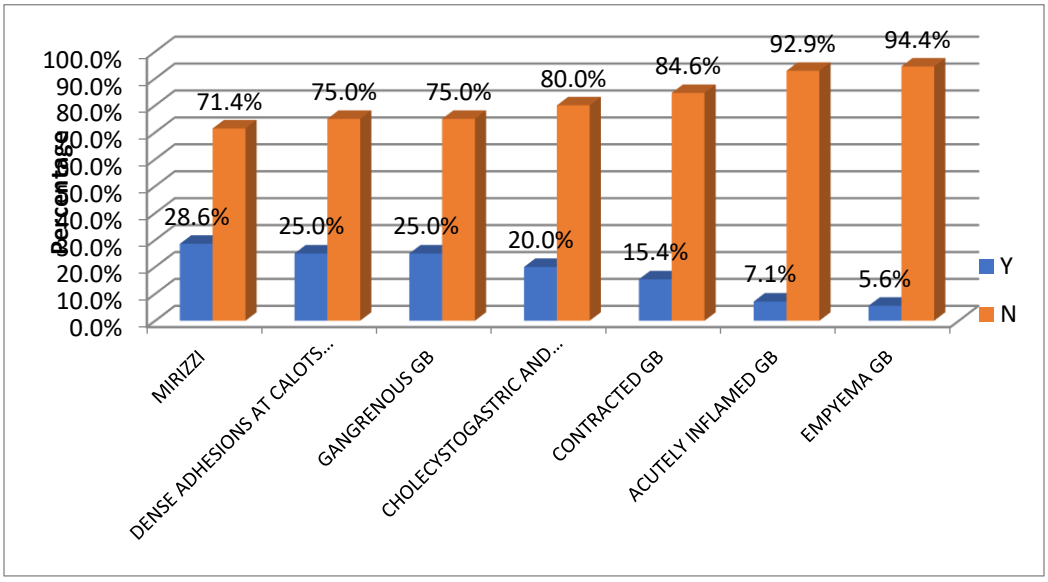


In our study of 267 patients, 256 were completed successfully laparoscopically with only 4.1% (n=11) requiring conversion to open cholecystectomy.

TABLE 19: ASSOCIATION OF INTRAOPERATIVE FINDINGS AND NEED FOR CONVERSION TO OPEN CHOLECYSTECTOMY

	NEED FOR CONVERSION				Total
	Y		N		
Mirizzi	2	28.6%	5	71.4%	7
Dense adhesions at calots triangle	2	25.0%	6	75.0%	8
Gangrenous GB	1	25.0%	3	75.0%	4
Cholecystogastric and cholecystoduodenal fistula	1	20.0%	4	80.0%	5
Contracted GB	2	15.4%	11	84.6%	13
Acutely inflamed GB	2	7.1%	26	92.9%	28
Empyema GB	1	5.6%	17	94.4%	18

FIGURE 19: ASSOCIATION OF INTRAOPERATIVE FINDINGS AND NEED FOR CONVERSION TO OPEN CHOLECYSTECTOMY



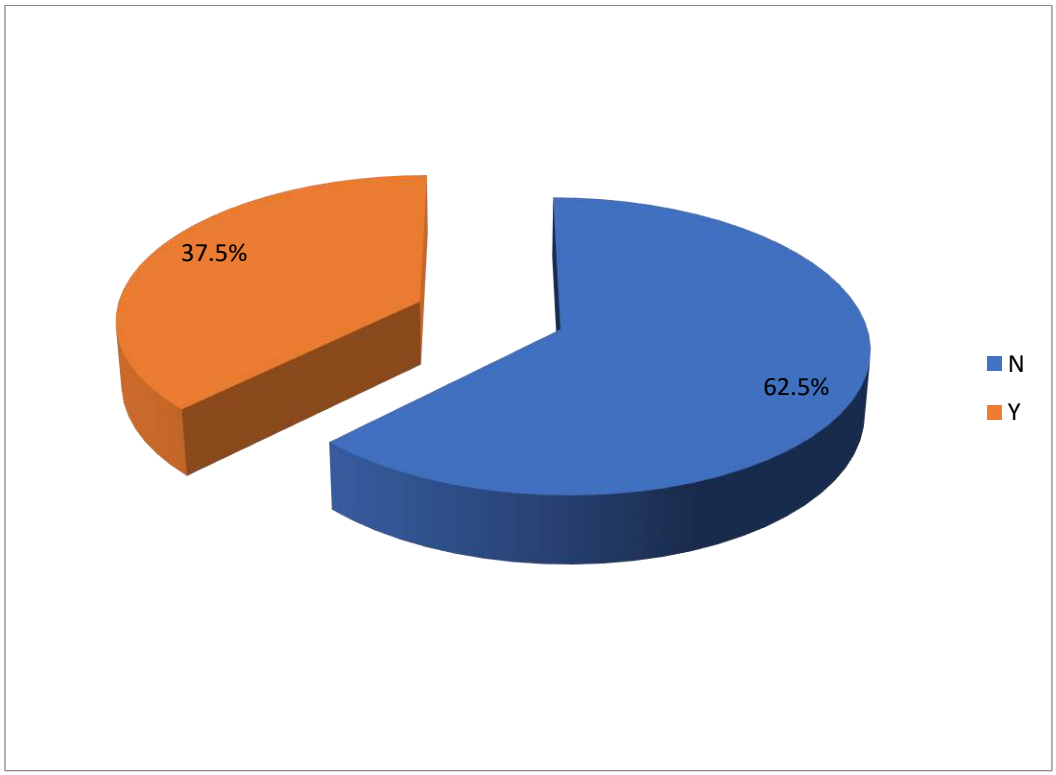
In our study of 11 patients required conversion of which 2 were due to contracted gall bladder, 2 were due to acutely inflamed gall bladder, 2 were due to dense adhesions at gall bladder, 2 were due to Mirizzi Syndrome and 1 each were due to gangrenous gall bladder and empyema gall bladder respectively.

C) Postoperative profile

TABLE 20: INCIDENCE OF PONV

PONV	No. of cases	Percentage
No (N)	167	62.5%
Yes (Y)	100	37.5%
Total	267	100.0%

FIGURE 20: INCIDENCE OF PONV

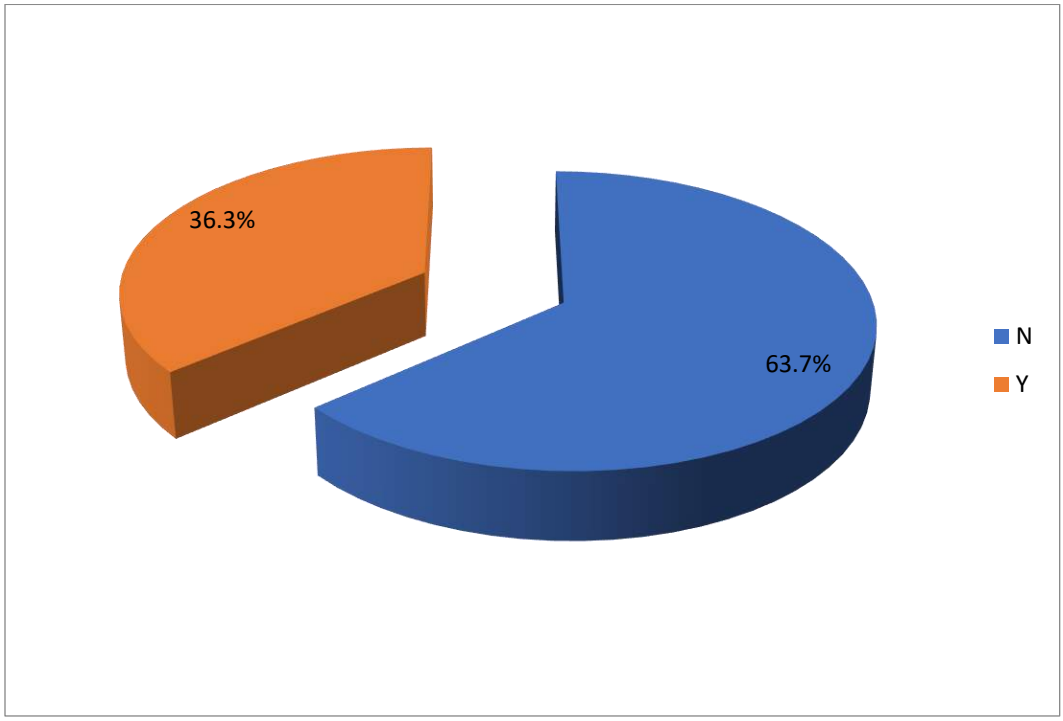


In our study the incidence of PONV in immediate post operative period was 37.5 % (n= 100).

TABLE 21: INCIDENCE OF SHOULDER TIP PAIN

Shoulder Tip Pain	No. of cases	Percentage
No (N)	170	63.7%
Yes (Y)	97	36.3%
Total	267	100.0%

FIGURE 21: INCIDENCE OF SHOULDER TIP PAIN

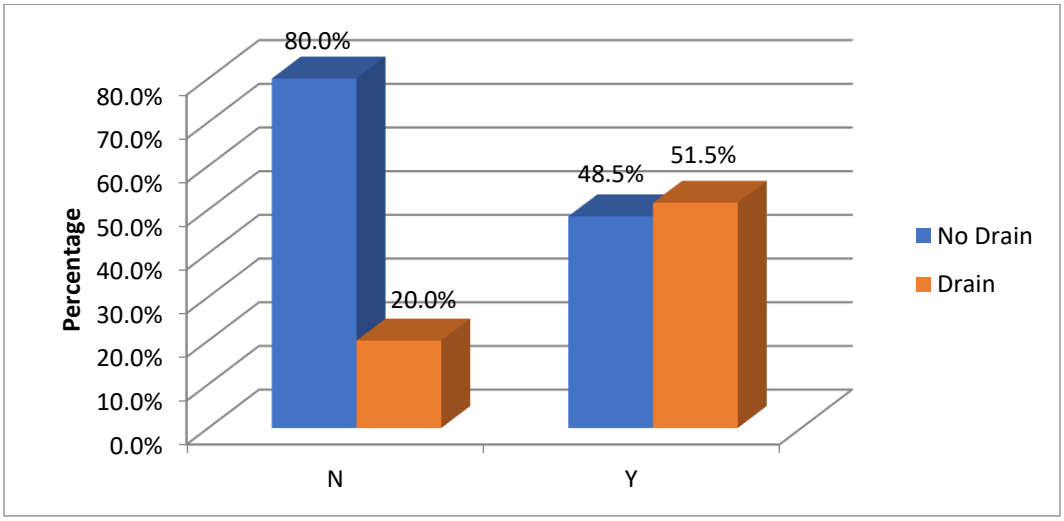


In our study of the 267 patients undergoing laparoscopic cholecystectomy the incidence of shoulder tip pain was 36.3% (n=97).

TABLE 22: ASSOCIATION OF SHOULDER TIP PAIN WITH DRAIN INSERTION

		Shoulder Tip Pain				Total
		N		Y		
Drain	N	136	80.0%	47	48.5%	183
	Y	34	20.0%	50	51.5%	84
Total		170	100.0%	97	100.0%	267

FIGURE 22: ASSOCIATION OF SHOULDER TIP PAIN WITH DRAIN INSERTION

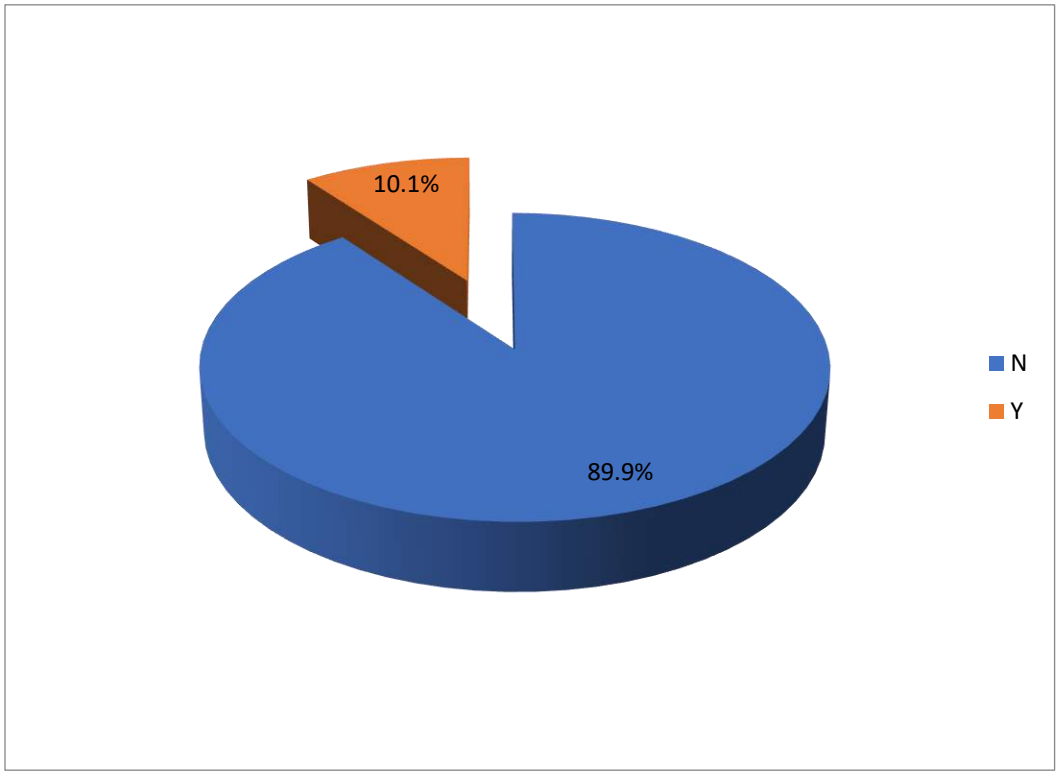


In our study of the 97 patients who developed shoulder tip pain 50 patients (51.5%) required abdominal drain based on their intraoperative finding. It was observed that in patients with abdominal drain 59% patients developed shoulder tip pain while in patients without drain 25% patients developed pain.

TABLE 23: INCIDENCE OF ABDOMINAL DISTENSION

ABDOMINAL DISTENSION	No. of cases	Percentage
No (N)	240	89.9%
Yes (Y)	27	10.1%
Total	267	100.0%

FIGURE 23: INCIDENCE OF ABDOMINAL DISTENSION

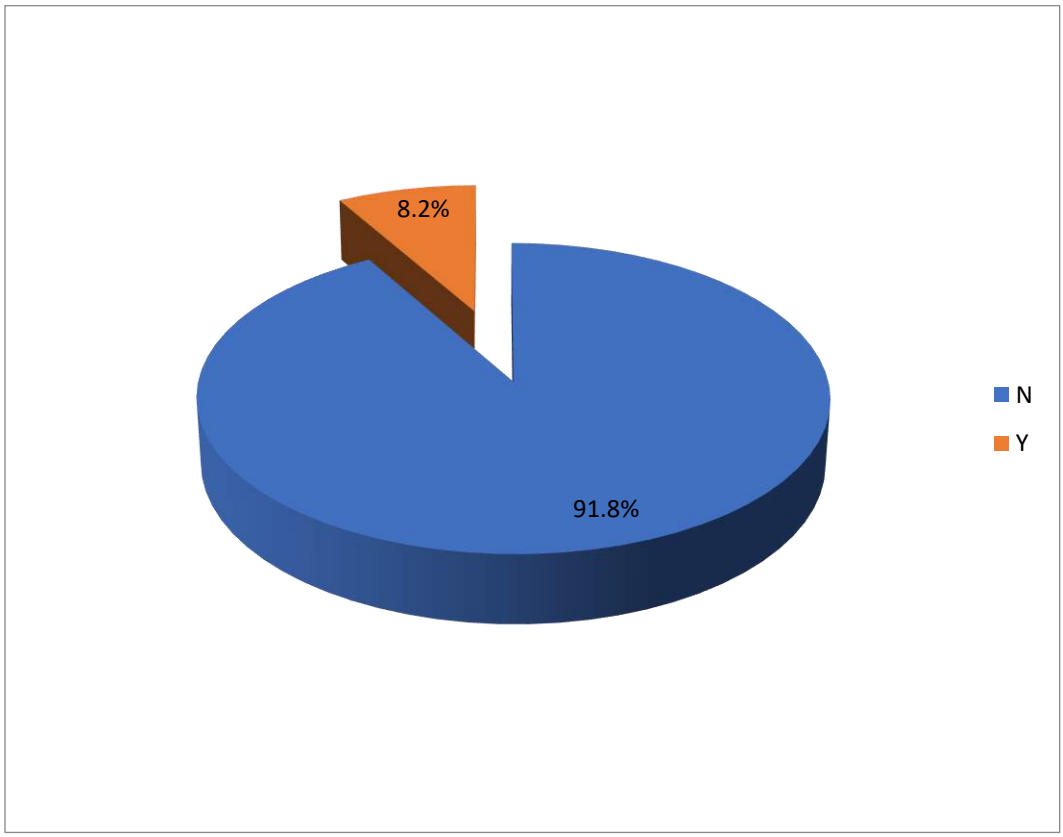


In the 267 patients undergoing LC. 27 patients (10.1%) had complaint of abdominal distension in the immediate post operative period.

TABLE 24: INCIDENCE OF URINARY RETENTION

URINARY RETENTION	No. of cases	Percentage
N	245	91.8%
Y	22	8.2%
Total	267	100.0%

FIGURE 24: INCIDENCE OF URINARY RETENTION

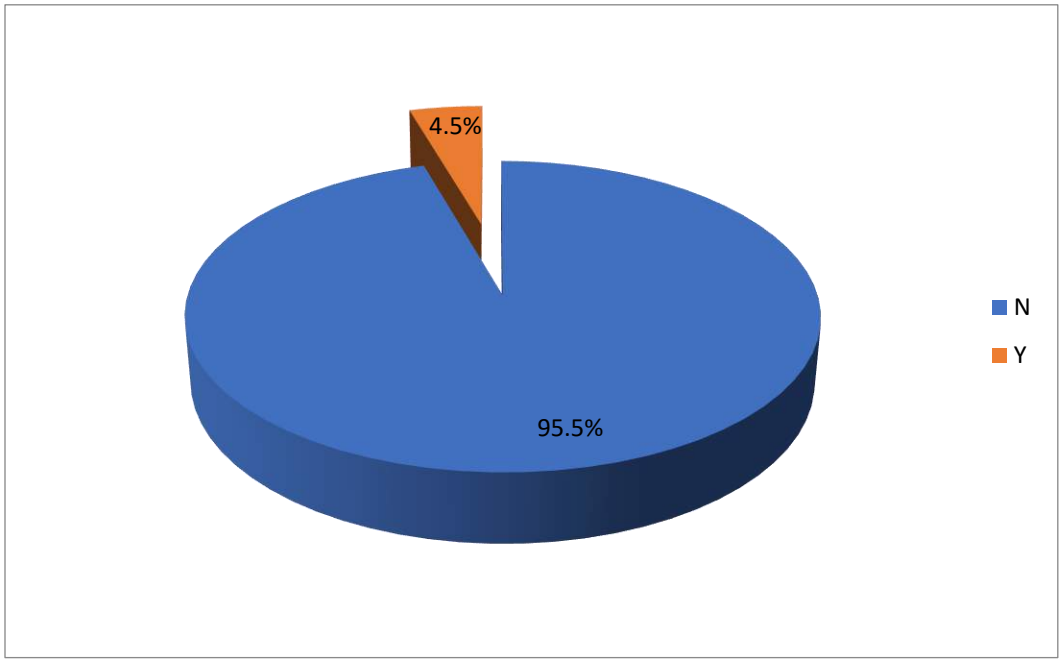


The incidence of POUR in the immediate post operative period was 8.2%(n=22).

TABLE 25: NEED FOR CATHETERIZATION IN PATIENTS DEVELOPING POUR

Need For Catheterization	No. of cases	Percentage
N	255	95.5%
Y	12	4.5%

FIGURE 25: NEED FOR CATHETERIZATION IN PATIENTS DEVELOPING POUR

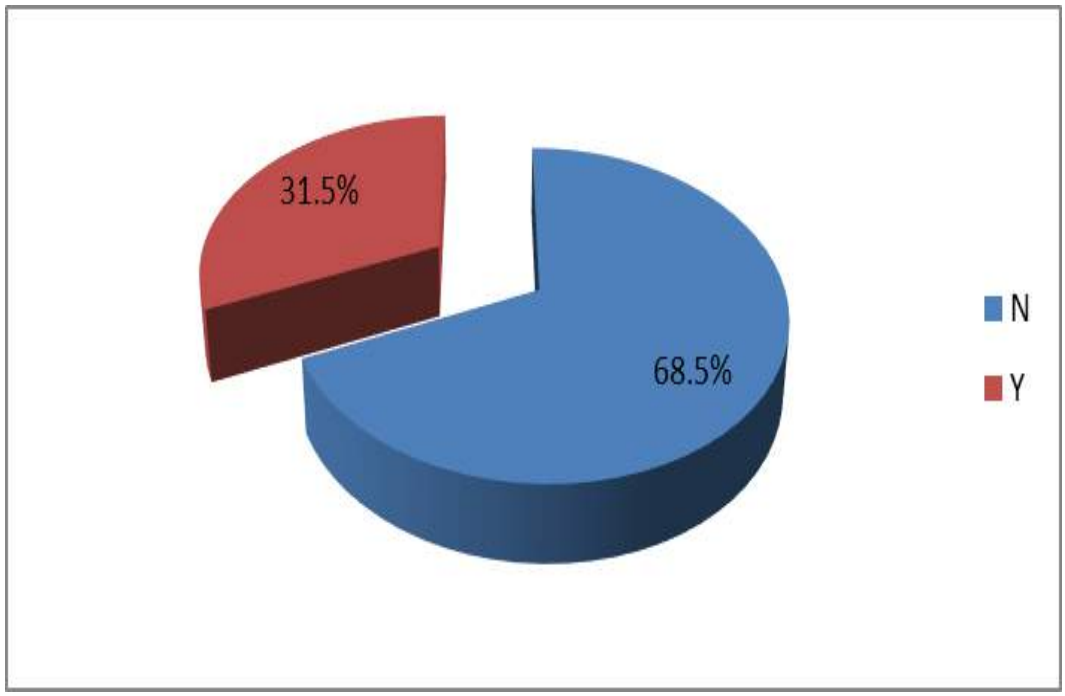


Of the 267 patients undergoing lap chole 22 patients (8.2%) developed POUR of which 12 catheterization was required in 12 patients (4.5%) undergoing laparoscopic cholecystectomy.

TABLE 26: NEED OF DRAIN INSERTION IN PATIENTS UNDERGOING LAPAROSCOPIC CHOLECYSTECTOMY

DRAIN	No. of cases	Percentage
N	183	68.5%
Y	84	31.5%
Total	267	100.0%

FIGURE 26: NEED OF DRAIN INSERTION IN PATIENTS UNDERGOING LAPAROSCOPIC CHOLECYSTECTOMY

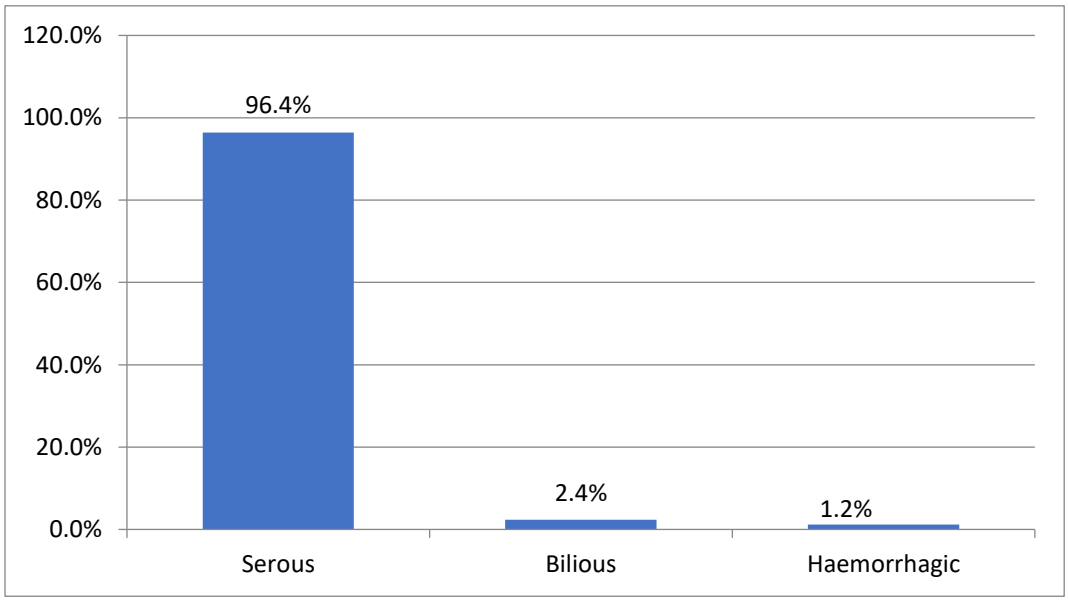


In our study of the 267 patients undergoing LC intraabdominal drain was placed in 31.5% patients (n=84)

TABLE 27: NATURE OF DRAIN OUTPUT (n=84)

BIL/SEROUS/HGIC	No. of cases	Percentage
Serous	81	96.4%
Bilious	2	2.4%
Haemorrhagic	1	1.2%
Total	84	100.0%

FIGURE-27 NATURE OF DRAIN OUTPUT



Drain was placed in 84 patients undergoing LC. The drain output was serous in 96.4% of the patients (n=81) Bilious in 2.4% patients (n=2) and hemorrhagic in 1.2 % patients (n=1).

DISCUSSION

In 1985, Muhe was the first surgeon to conduct a laparoscopic cholecystectomy.[36] Lower patient morbidity and recovery time have all been attributed to LC; nevertheless, it does come with the risk of conversion to open surgery and a slightly higher risk of CBD injury. However, many surgeons have performed LC successfully in difficult cases since 1990, and they have emphasized that extensive experience with both open and laparoscopic biliary tract surgery is the most important factor in achieving a positive outcome in difficult patients.[26]

The difficulty of gallbladder surgery can be predicted based on the patient's clinical profile. Even in such a patient, the procedure may be accomplished laparoscopically based on the operating surgeon's experience. As a result, we have a policy of attempting LC in all patients that are suited for laparoscopy surgery. Converting to open surgery is not seen as an issue, but rather as a matter of good medical judgement with patient safety always prioritized.

In some cases, the technique was modified by (1) inserting additional trocars to allow for liver and duodenal retraction, and (2) aspirating the gallbladder via the 5 mm subcostal trocar, as aspiration of the distended gallbladder allows for confirmation of the diagnosis while also making the subsequent dissection easier. (3) a toothed grasper with a diameter of 10 mm for gripping thick-walled gallbladders (4) A peanut swab held in a grasper designed for blunt dissection can be used to open up the planes of the gallbladder with greater ease in the case of acute inflammation.

We conducted a prospective study on 267 patients admitted in Dayanand Medical College and Hospital, Ludhiana for laparoscopic cholecystectomy and evaluated the immediate complications after laparoscopic cholecystectomy

A) PRE-OPERATIVE PROFILE

In the present study 45.7 percent of the patients belonged to the age group of more than 40 years followed by 30.3 % in the 31-40 years age

group. Mean age of the patients of the present study was 49 years. The minimum age was 10 years and maximum age 87 years. Majority of the patients belonged to middle age group.

Our findings were consistent with those of Viswanathan V et al. [67] and Shaheed M et al.[87] who both reported similar age groups of patients in their research. In the studies undertaken by Shaheed M et al.[87] and Viswanathan V et al. [67], the average age of the patients was 44.6 years and 36.5 years, respectively.

TABLE 28: COMPARISON OF MEAN AGE

Authors	Mean age
Present study	49 years
Viswanathan V et al.[67]	36.5 years
Shaheed M et al.[87]	44.6 years

In our study, female patients (57.3 percent) outnumbered male patients (42.7 percent). the results were in agreement with research conducted by Zarin et al.[79] on 218 patients who had laparoscopic cholecystectomies done with a critical perspective of safety method, in which 66.5 percent were female patients. Bulent kaya et al.[80] enlisted a total of 120 participants, with 81 (67.5%) women and 39 (32.5%) men participating in the trial.

TABLE 29: COMPARISON OF GENDER WISE DISTRIBUTION OF PATIENTS

Authors	Male patients	Female patients
Present study	42.7%	57.3 %
Zarin et al.[79]	33.5%	66.5 %
Bulent kaya et al.[80]	32.5%	67.5%

Female preponderance is seen usually as cholelithiasis is prevalent more among females.

Patients reported a wide range of clinical symptoms. In this prospective study, it was discovered that 214 patients reported to the General Surgery department with a complaint of abdominal discomfort, making it the most prevalent presentation, followed by heaviness (179 patients) and indigestion (157 patients). Fever was found in 82 of the patients. Out of 267 patients, 10 were asymptomatic, and were identified with cholelithiasis as an incidental finding on ultrasonography. Abdominal discomfort was the most common symptom in a study by Vishwanathan et al.[67], followed by fever and nausea/vomiting.

Pain was the most common clinical complaint reported by patients in Ajay Kumar et al.[82] study, with 100 percent of patients reporting it. Dyspepsia and vomiting were discovered in 46.67 percent and 5.33 percent of the patients, respectively.

In the present study, all the patients included in this study underwent radiological investigation in form of ultrasonography. It was observed that 228 patients (85.4%) had multiple gall stones while 39 patients (14.6%) had single gall stone. Gall bladder sludge was observed in 40 patients (15%). The stone was impacted in the neck of gall bladder in 25 patients (9.4%). Empyema and pericholecystic fluid were observed in 5.2% and 9.7% patients.

Vishwanathan et al study[67] of 100 patients reported ultrasonographic findings as probe tenderness in 15, single calculi 43, multiple calculi 41, gall bladder sludge in 11 and empyema in 3 and peri cholecystic collection in 2 patients.

66.7 percent of the patients on ultrasonographic evaluation had gall stones in the study by Vettoretto N et al.[81]

TABLE 30: COMPARISON OF ULTRASONOGRAPHIC FINDINGS

Ultrasonographic findings	Present study(n=267)	Vishwanathan et al.(n=100)
Single calculi	39	43
Multiple calculi	228	41
Gall bladder sludge	40	11
Empyema	14	3
Pericholecystic fluid	26	2

INTRAOPERATIVE FINDINGS

In this prospective study, after informed consent, 267 patients underwent laparoscopic cholecystectomy. In all the cases, an attempt to achieve critical view of safety was made.

In maximum patients (n=141), the duration of surgery was less than 90 minutes with mean duration of surgery being 94 minutes.

In our study normal anatomy intraoperatively was found in 68.9% (184) patients. Other patients based on their intraoperative finding were taken as difficult laparoscopic cholecystectomy cases of which acutely inflamed gall bladder was the most common intraoperative finding found in 10.5% patients (n=28). Empyema gall bladder was found in 6.7% patients (n=18), contracted gall bladder in 4.9% patients (n=13), dense adhesions at calots triangle 3% (n=8), Mirizzi syndrome in 2.6%(n=7), cholecystogasrtic/ duodenal fistula in 1.9% (n= 5) and gangrenous gall bladder in 1.5 % (n=4) patients.

The overall conversion rate in our experience was 4.1% (n=11) of the total LCs performed, which is consistent with the literature and also keeping an open mind for the fact that our center gets a lot of referrals of complicated cases.[55,60] Males made up 72.7 % of the total patients who needed open cholecystectomy in our study. The inability of anatomical identification of

Calot's triangle structures due to inflammation is the main reason for conversion.

A comprehensive understanding of the anatomy is required for a successful laparoscopic cholecystectomy. The inflammatory and fibrotic changes around the cystic duct and artery, as well as the common bile duct, become significant because of the concern about common bile duct injury.[57]

TABLE 31: COMPARISON OF RATE OF CONVERSION TO OPEN CHOLECYSTECTOMY

Authors	Rate of conversion to open cholecystectomy
Present study	4.1%
DC Wherry et al.[55]	8.08%
Kaushik R et al.[60]	7.06%

The most common reason for conversion was MIRIZZI SYNDROME (MS). MS was responsible for 28.6% of the total patients that were converted to open cholecystectomy. In addition, a conversion rate of 40% was discovered in MS cases. These conversion rates are consistent with the study conducted by Kwon et al.[83] and support the observations cited by Shirah et al. that inspite of advances in technique and experience of laparoscopic cholecystectomy management of MS is challenging for the operating surgeon.[56]

TABLE 32: COMPARISON OF RATE OF CONVERSION IN MIRIZZI SYNDROME

AUTHORS	RATE OF CONVERSION IN MIRIZZI SYNDROME
Present study	40%
Kwon et al.[83]	31%

The second most prevalent reason for conversion to open surgery was dense adhesions at the Calot's triangle, followed by gastric and duodenal fistula and gangreous gall bladder for conversion out of challenging situations.[55] In our study, thick adhesions and choledochoduodenal/gastric fistulas occurred in 3% and 1.9% of patients, respectively, with 25% and 20% of those requiring conversion to open cholecystectomy.

Acute cholecystitis was regarded as a relative contraindication to laparoscopic cholecystectomy in the early days of laparoscopic surgery. For acute cholecystitis, laparoscopic cholecystectomy has recently been proven to be possible and safe [57]. The incidence of acute cholecystitis was 10.5 percent in our study, and only three of the 28 cases required conversion to open cholecystectomy, supporting Kolla SB et al. findings that early laparoscopic cholecystectomy for acute cholecystitis is safe and practical.[58]

TABLE 33: COMPARISON OF RATE OF CONVERSION IN ACUTE CHOLECYSTITIS

AUTHORS	RATE OF CONVERSION IN ACUTE CHOLECYSTITIS
Present study	10.5%
Kolla SB et al.[58]	25%

We continue to believe that within 72 hours of onset of symptoms, the tissue planes are edematous and inflammatory, but easier to dissect with no adhesions. However, after 72 hours, the tissue becomes more friable, making dissection perilous and unsafe until the inflammation decreases and fibrosis forms in, which takes 3–4 weeks. Despite the fact that we took the patients for surgery even after 72 hours and were able to complete the majority of them without conversion, the intraoperative level of difficulty

was high and dangerous and the mean operating duration was substantially longer.

POST OPERATIVE PROFILE

LC has largely replaced conventional open cholecystectomy. The main reason for this change was the more tolerable postoperative period, shorter hospitalization and early return to work.[7] However, shoulder pain, backache, nausea, and vomiting due to residual pneumoperitoneum are absent in conventional laparotomy. Diaphragmatic stretch during laparoscopy is one of the proposed pathways for PP, especially shoulder pain.[66]

The recovery from major surgery is divided into three phases 1) an immediate or post anaesthetic phase, 2) an intermediate phase, encompassing the hospitalisation period 3) a convalescent phase. Immediate postoperative period is taken as the first 24 hours after surgery or the time in which the patient remains in PACU. The patient can be discharged from the PACU/recovery room when cardiovascular, pulmonary and neurological functions have returned to baseline, which usually occurs in 1-3 hours following operation.[9] In our study the patients were evaluated in the immediate post operative period.

In our study we studied the incidence of pain after laparoscopic cholecystectomy and the influence of factors like duration of surgery, gender, age and effect of presence of drain on the shoulder tip pain. According to our study the incidence of shoulder tip pain was 36.3 %. This is in accordance to the study conducted by A. Dey et al where the incidence of shoulder tip pain has been reported as high as 30-50%.[84]

TABLE 34: COMPARISON OF INCIDENCE OF SHOULDER TIP PAIN

AUTHORS	INCIDENCE OF SHOULDER TIP PAIN
Present study	36.3%
Ashish Dey et al.[84]	30-50%

The association of shoulder tip pain and the duration of surgery in our study was analysed and it was found that the patients undergoing laparoscopic cholecystectomy for a prolonged duration of time have higher incidence of shoulder tip pain which reiterates the observations of Kandil et al. that incidence of pain increases significantly in people with longer duration of operation. In our study of the 97 patients having shoulder tip pain 67% had duration of surgery more than 90 minutes.[61]

TABLE 35: COMPARISON OF INCIDENCE OF SHOULDER TIP PAIN IN PATIENTS WITH DURATION OF SURGERY > 90 min

AUTHORS	INCIDENCE OF SHOULDER TIP PAIN IN PATIENTS WITH DURATION OF SURGERY > 90 min
Present study	69 %
Kandil et al.[61]	76.7%

According to several studies, women have a lower pain threshold and a poorer tolerance for painful stimuli than men. The fact that more women than men reported severe baseline pain in our study may indicate women's lower pain threshold. Men and women have different socialisation processes, which alter physiological experience and the willingness to report suffering, which has been linked to sex differences in pain perception. Hormone differences could potentially explain sex

differences in pain perception and analgesic response.[62,64] Uchiyama et al. observed that women have higher pain intensity following LC, which is consistent with the findings of our study, in which 54.6 percent of the 97 patients with shoulder tip discomfort were females.[65]

The correlation between postoperative shoulder pain and drain insertion was studied. According to Kazuhisa et al., drain placement after LC increased discomfort [72]. Drain was discovered in 53 percent of participants with shoulder tip pain in our study. As a result, we advise unless there are substantial intraoperative difficulties, no drain should be introduced following LC.

PONV is related with a high prevalence of laparoscopic procedures (40 percent–75 percent).[68] In our study, 37.5 percent of the participants had PONV. The aetiology of PONV after laparoscopic surgery is complicated and depends on a variety of factors, including age, gender, previous PONV history, and surgery duration, but is not limited to these.

According to our findings, females had a higher incidence of PONV and required more rescue antiemetics than males, which is consistent with the findings of Parra Marcela et al.[74], who found that early postoperative pain, nausea, and vomiting after LC were more common in women, who required more analgesic and antiemetic rescue medication. In the female population, PONV was found in 46.4% of those who had a laparoscopic cholecystectomy and 71 percent of those who had developed PONV.

The incidence of PONV was found to be higher in the adolescent group accounting for 60% of those undergoing laparoscopic cholecystectomy, which is consistent with a study conducted by Watcha MF et al.[10] who discovered that adolescent had a higher risk of developing PONV in the postoperative period.

Another key factor contributing to the development of PONV was discovered to be the length of surgery, with a 62 percent incidence in patients who had laparoscopic cholecystectomy completed after more than 90 minutes, thus supporting Bellville et al.[86] The rationale behind this

is that longer surgeries expose patients to more emetic anaesthetics, reducing the effectiveness of anti-emetic drugs.

TABLE 36: COMPARISON OF ASSOCIATION OF PONV WITH DURATION OF SURGERY > THAN 90 min

Author	Association of PONV with duration of surgery > than 90 min
Present study	62%
Bellville et al.[86]	46.4%

POUR is a complication that can occur after any surgical treatment and is not limited to people who already have urine symptoms. Urinary retention, while sometimes dismissed as a minor issue but can cause patient anxiety and discomfort.[75]

In our study we took the definition of POUR as the inability to pass urine despite having a full bladder. In our study, the incidence of POUR was 8.2 %. The incidence of patients undergoing POUR of age more than 60 years was 31.8% with the majority of patients developing POUR being between 40 -60 years. 81.8 % of the patients who developed POUR were males and 86.4% of patients had the duration of surgery more than 90 minutes. This in accordance with the studies conducted by Wymd ca et al and Olsen et al.[78,85]

In our study the incidence of abdominal distension was 10.1 % and was found in 27 patients. The data available to correlate the incidence of abdominal distension post laparoscopic cholecystectomy is less and further studies on this topic can be done.

Thirty-one years after Langenbuch performed the first cholecystectomy in 1919, the "ideal procedure" in Germany was a cholecystectomy without drains. Despite the fact that numerous later studies back up this claim, the use of drains after cholecystectomy is still debatable. Despite the lack of

scientific data, it would be a mistake to dismiss the use of drains after abdominal procedures as a common practice. The frequency of drain use can be better appreciated in light of the higher likelihood of averting surgical problems such as leaks and bleeding or of early diagnosis with a drain.[5]

In our study intra abdominal drain was placed in cases where dissection was difficult enough to cause bleeding or with other difficult intraoperative findings. Drain output was hemorrhagic in one case and bilious in 2 patients while being serous in the majority of the cases. We agree with Gurer et al. that drain after laparoscopic cholecystectomy shall be avoided in patients who do not have any significant intra operative complication.[77]

It can be concluded that LC is the preferred method even in difficult cases. Our study emphasizes that although the rate of conversion to open surgery and the complication rate are low in experienced hands the surgeon should keep a low threshold for conversion to open surgery and it should be taken as a step in the interest of the patient rather than be looked upon as an insult to the surgeon. The incidence of immediate post operative complications like shoulder tip pain, abdominal distension, PONV, POUR is considerable and shall be kept in mind while planning the treatment of patient. Drain after LC shall be used selectively and be avoided in patients with normal intraoperative findings.

SUMMARY AND CONCLUSION

In the present prospective study, 267 patients undergoing laparoscopic cholecystectomy in the Department of General Surgery, Dayanand Medical College and Hospital Ludhiana were enrolled in the study to evaluate the immediate complications after laparoscopic cholecystectomy. Following observations were made-

- Maximum number of patients were in the age group of > 40 years (45.7) followed by 30.3% in the 20 – 40 years age group.
- Mean age of the patients of the present study was 49 years.
- Female patients (57.3%) outnumbered the male (42.7%) patients in our study.
- Most common presenting complaint was pain abdomen in 214 out of 267 patients followed by heaviness in 179 and indigestion in 157 patients.
- 228 patients (85.4%) had multiple gall stones while 39 patients (14.6%) had single gall stone.
- On ultrasonographic examination, Gall bladder sludge in 40 patients (15%). The stone was impacted in the neck of gall bladder in 25 patients (9.4%) Empyema and pericholecystic fluid were seen in 5.2 and 9.7 % cases respectively.
- Intra operatively, normal anatomy was seen in 68.9 % cases (n=184).
- Acutely inflamed gall bladder was seen in 10.5% patients (n=28), empyema gall bladder in 6.7% (n=18), contracted gall bladder in 4.9 % patients (n=13) dense adhesions in 3% patients (n=8), mirizzi syndrome in 2.6 % patients (n=7), cholecystogastric and cholecystoduodenal fistula in 1.9% (n=5) patients.
- Out of 267 patients, intra operatively in 11 patients, laparoscopic cholecystectomy was converted to open cholecystectomy of which 8 patients were males.

- In maximum patients, the duration of surgery was less than 90 minutes.
- Mirizzi Syndrome was the most common reason for conversion to open cholecystectomy.
- The incidence of shoulder tip pain in our study was 36.3%. Of the 97 patients having shoulder tip pain 70 patients were more than 40 years, 53 patients were females, 44 were males. 67 patients who developed shoulder tip pain in the immediate post operative period had duration of surgery more than 90 minutes.
- The incidence of PONV was 37.5 % (n = 100) of which 74 patients were more than 40 years of age. Of the 100 patients who developed PONV 71 were females.
- The incidence of POUR in our study was 8.2% (n=22). Of the 22 patients having POUR 20 patients were more than 40 years and 18 were males. 19 patients who developed post operative urinary retention in the immediate post operative period had duration of surgery more than 90 minutes.
- Intra abdominal drain was placed in 84 patients Drain output was serous in majortiy of the patients with bilious in 2 and haemorrhagic in 1 patient. Of the 84 patients with abdominal drain 50 patients developed shoulder tip pain.

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						PRESENTING COMPLAINTS						ULTRASOUND FINDINGS						INTRAOPERATIVE FINDINGS					
S. NO	MRD no	NAME	age	sex	Presenting Complaints duration (MONTHS)	ABD PAIN	HEAVINESS	INDIGESTION	INCIDENTAL FINDING	FEVER	Ultrasound NO OF STONES	Ultrasound IMPACTED STONE IN NECK OF GB	Ultrasound pericholycystic fluid	Ultrasound GB wall thickness	Ultrasound GB sludge	Ultrasound empyma	intra op NORMAL ANATOMY	DENSE ADHESIONS AT CALOTS TRIANGLE	CONTRACTED GB	ACUTELY INFLAMED GB	GANGRENOUS GB	EMPYEMA GB
1	1003114	HS	15	M	4	Y	N	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
2	1003598	BS	48	M	3	Y	Y	Y	N	N	M	N	N	Y	N	N	0	0	0	1	0	0
3	120547	S	54	F	2	Y	Y	Y	N	N	S	N	N	N	N	N	1	0	0	0	0	0
4	60945	HK	51	M	5	Y	Y	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
5	1003300	JA	52	M	4	N	Y	Y	N	N	M	N	N	Y	N	N	0	0	1	0	0	0
6	980585	KL	50	F	5	Y	Y	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
7	227276	LR	73	F	12	Y	Y	Y	N	N	S	Y	N	N	Y	N	1	0	0	0	0	0
8	1004410	GS	24	M	2	Y	Y	Y	N	N	M	N	Y	Y	Y	Y	0	0	0	1	0	0
9	1003793	AR	41	F	9	Y	Y	Y	N	N	S	N	N	Y	N	N	1	0	0	0	0	0
10	722	DS	87	M	6	Y	N	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
11	1005316	NK	60	M	5	Y	Y	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
12	1005975	AM	62	M	9	Y	N	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
13	955130	SS	53	F	4	N	Y	Y	N	N	M	N	N	Y	N	Y	0	0	0	1	0	0
14	72241	TK	63	F	6	N	N	Y	Y	N	M	N	N	N	N	N	1	0	0	0	0	0
15	1006691	GK	40	F	24	N	Y	Y	N	N	S	N	N	N	N	N	1	0	0	0	0	0
16	947992	AS	61	M	6	Y	Y	Y	N	N	M	N	N	N	N	N	0	0	1	0	0	0
17	992472	PW	85	F	3	Y	N	Y	N	N	M	N	N	N	Y	N	1	0	0	0	0	0
18	26193	US	55	F	N	N	N	Y	Y	N	M	N	N	N	N	N	1	0	0	0	0	0
19	976805	RK	62	M	12	Y	N	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
20	975910	RK	50	M	36	Y	N	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
21	975712	MA	33	F	8	Y	Y	Y	N	N	S	Y	N	N	N	N	0	0	0	0	1	0
22	910652	SK	58	F	4	Y	Y	Y	N	N	M	N	N	N	N	N	0	0	0	0	0	1
23	975392	R	29	F	5	Y	Y	N	N	N	M	N	N	N	N	N	0	0	0	0	0	1
24	973473	B	60	F	0.03	Y	Y	Y	N	N	S	N	N	N	N	N	0	0	0	1	0	0
25	973607	AR	69	F	5	N	Y	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
26	546826	PL	46	F	6	Y	N	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
27	972322	AG	60	F	8	Y	N	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
28	972076	GS	39	M	0.07	Y	Y	Y	N	Y	M	N	N	N	N	N	0	0	0	1	0	0
29	971857	H	28	F	5	N	Y	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
30	970739	GS	33	M	7	Y	Y	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
31	970604	SK	27	M	4	Y	Y	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
32	969275	BS	59	M	5	Y	N	Y	N	N	M	N	Y	Y	N	Y	0	0	0	0	0	0
33	932743	NK	49	M	8	Y	N	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
34	970030	KK	44	M	0.2	Y	Y	Y	N	N	M	N	N	N	N	N	0	0	0	1	0	0
35	3283180	NL	69	M	2	Y	Y	N	N	N	M	Y	N	Y	N	N	0	0	1	0	0	0
36	935383	M	50	F	0.07	Y	N	Y	N	N	M	N	N	N	Y	N	0	0	0	1	0	0
37	967948	BM	75	M	24	Y	Y	N	Y	N	M	N	Y	Y	Y	Y	0	0	0	0	0	0
38	969892	MK	57	F	24	Y	Y	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
39	969526	P	63	F	0.03	Y	Y	Y	N	N	M	N	N	N	N	N	0	0	0	1	0	0
40	969912	AK	58	M	6	Y	N	N	N	N	M	Y	Y	N	N	Y	0	0	0	0	0	1
41	954243	SB	72	F	12	Y	N	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
42	121842	BR	58	F	0.07	N	N	Y	Y	N	M	N	N	N	N	N	0	0	0	1	0	0
43	966617	BM	26	F	9	Y	N	Y	N	N	S	N	N	N	Y	N	1	0	0	0	0	0
44	384462	B	22	F	18	Y	Y	Y	N	N	M	N	N	Y	N	N	0	0	1	0	0	0
45	965843	VS	42	M	4	N	Y	Y	N	N	M	N	N	N	N	N	0	0	0	1	0	0
46	968543	KS	87	M	0.67	Y	Y	Y	N	Y	M	N	N	N	Y	N	0	0	0	1	0	0
47	962604	RK	52	F	5	N	Y	N	N	N	M	N	N	N	Y	N	1	0	0	0	0	0
48	967391	AS	63	M	0.07	Y	N	Y	N	N	M	N	Y	Y	Y	N	0	0	0	1	0	0
49	966132	SS	53	M	2	Y	Y	N	N	N	M	Y	Y	N	N	Y	0	0	0	0	0	1
50	965631	B	45	F	8	Y	N	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
51	966866	MA	58	F	12	Y	N	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
52	963822	KR	60	F	0.93	Y	Y	Y	N	N	M	N	N	N	N	N	0	0	0	1	0	0
53	6695	MA	40	M	0.07	Y	Y	N	N	N	S	Y	Y	Y	N	N	0	0	0	1	0	0
54	966348	OS	40	M	4	Y	Y	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
55	966022	N	41	F	5	Y	Y	Y	N	N	M	N	N	N	Y	N	1	0	0	0	0	0
56	9111	SC	64	M	6	Y	Y	Y	N	N	M	N	Y	N	Y	Y	0	0	0	0	0	1
57	230012	SG	60	M	5	Y	Y	N	N	N	M	N	N	N	N	N	0	0	0	0	0	0
58	965396	HK	71	F	6	Y	Y	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
59	611321	KS	55	F	8	Y	Y	Y	N	N	S	Y	N	N	N	N	1	0	0	0	0	0
60	963892	SS	54	M	7	Y	Y	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
61	3943	NK	49	F	5	Y	Y	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
62	961610	S	39	F	7	Y	Y	Y	N	N	S	N	N	N	N	N	1	0	0	0	0	0
63	962306	DS	32	M	0.13	Y	Y	N	N	N	M	N	N	N	N	N	0	0	0	1	0	0
64	957719	RK	47	F	5	Y	Y	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
65	962054	SC	61	M	8	Y	Y	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
66	813916	MS	22	M	2	Y	Y	Y	N	Y	M	N	N	N	N	N	0	0	0	1	0	0
67	528648	JK	79	M	8	Y	Y	Y	N	N	M	N	N	Y	N	N	0	0	1	0	0	0
68	960684	OP	32	F	7	Y	Y	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
69	959826	SK	32	F	2	Y	Y	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0

S. NO	MRD no	CHOLECYSTOGASTRIC AND CHOLECYSTODUOD FISTULA	MIRIZZI	duration of surgery	NEED FOR CONVERSION	PONV	NEED OF ANTIEMETIC	shoulder tip pain	RELIEVED WITH MEDICATION	SINGLE DRUG	ABDOMINAL DISTENSION	URINARY RETENTION	NEED FOR CATHETERIZATION	DRAIN	BIL SEROUS HGIC
1	1003114	0	0	50	N	N	Y	N	N/A	N/A	Y	N	N	Y	SEROUS
2	1003598	0	0	120	N	N	Y	Y	Y	Y	Y	Y	Y	Y	SEROUS
3	120547	0	0	70	N	Y	N/A	N	N/A	N/A	N	N	N	N	-
4	60945	0	0	60	N	N	N/A	N	N/A	N/A	N	N	N	N	-
5	1003300	0	0	180	Y	Y	N/A	Y	Y	N	N	Y	Y	Y	SEROUS
6	980585	0	0	50	N	N	Y	Y	Y	Y	N	N	N	N	-
7	227276	0	0	60	N	Y	N/A	N	N/A	N/A	Y	N	N	N	-
8	1004410	0	0	160	N	Y	N/A	Y	Y	Y	Y	Y	N	Y	SEROUS
9	1003793	0	0	100	N	Y	Y	N	N/A	N/A	N	N	N	N	-
10	722	0	0	120	N	Y	Y	Y	Y	Y	N	N	N	N	-
11	1005316	0	0	60	N	N	Y	N	N/A	N/A	Y	N	N	N	-
12	1005975	0	0	140	N	N	N/A	N	N/A	N/A	N	N	N	N	-
13	955130	0	0	150	N	N	N/A	N	N/A	N/A	N	N	N	Y	SEROUS
14	72241	0	0	40	N	N	N/A	N	N/A	N/A	Y	N	N	N	-
15	1006691	0	0	120	N	Y	Y	N	N/A	N/A	N	N	N	N	-
16	947992	0	0	180	N	Y	Y	Y	Y	Y	N	N	N	Y	SEROUS
17	992472	0	0	90	N	Y	Y	N	N/A	N/A	N	N	N	N	-
18	26193	0	0	50	N	N	N/A	N	N/A	N/A	Y	N	N	N	-
19	976805	0	0	140	N	Y	N/A	Y	Y	N	N	N	N	N	-
20	975910	0	0	60	N	N	N/A	N	N/A	N/A	N	N	N	N	-
21	975712	0	0	70	N	Y	N/A	N	N/A	N/A	N	N	N	Y	SEROUS
22	910652	0	0	120	N	Y	Y	Y	Y	Y	N	N	N	Y	SEROUS
23	975392	0	0	50	N	N	N/A	N	N/A	N/A	N	N	N	Y	SEROUS
24	973473	0	0	90	N	Y	Y	N	N/A	N/A	N	N	N	Y	SEROUS
25	973607	0	0	120	N	Y	Y	N	N/A	N/A	N	N	N	N	-
26	546826	0	0	80	N	Y	N/A	N	N/A	N/A	N	N	N	N	-
27	972322	0	0	60	N	Y	N/A	N	N/A	N/A	N	N	N	N	-
28	972076	0	0	180	N	Y	N/A	Y	N	N/A	Y	Y	Y	Y	SEROUS
29	971857	0	0	50	N	N	N/A	N	N/A	N/A	N	N	N	N	-
30	970739	0	0	120	N	N	N/A	Y	Y	Y	N	N	N	N	-
31	970604	0	0	90	N	N	Y	Y	Y	Y	N	N	N	N	-
32	969275	1	0	200	N	Y	Y	Y	Y	Y	Y	Y	N	Y	SEROUS
33	932743	0	0	120	N	N	N/A	N	N/A	N/A	N	N	N	N	-
34	970030	0	0	200	N	Y	Y	Y	Y	N	Y	Y	Y	Y	BILIOUS
35	3283180	0	0	180	N	N	N/A	Y	Y	N	N	Y	N	Y	hemorrhage
36	935383	0	0	70	N	Y	N/A	N	N/A	N/A	N	Y	Y	Y	SEROUS
37	967948	1	0	120	N	N	N/A	Y	N	N/A	Y	Y	Y	Y	SEROUS
38	969892	0	0	100	N	Y	Y	N	N/A	N/A	N	N	N	Y	SEROUS
39	969526	0	0	80	N	Y	N/A	N	N/A	N/A	N	N	N	Y	SEROUS
40	969912	0	0	80	N	N	N/A	N	N/A	N/A	N	N	N	Y	SEROUS
41	954243	0	0	70	N	Y	N/A	N	N/A	N/A	N	N	N	Y	SEROUS
42	121842	0	0	90	N	Y	Y	N	N/A	N/A	N	N	N	Y	SEROUS
43	966617	0	0	50	N	N	N/A	N	N/A	N/A	N	N	N	Y	SEROUS
44	384462	0	0	70	N	Y	N/A	N	N/A	N/A	N	N	N	Y	SEROUS
45	965843	0	0	120	N	N	Y	Y	Y	Y	N	N	N	Y	SEROUS
46	968543	0	0	90	Y	Y	Y	Y	Y	Y	N	Y	N	Y	SEROUS
47	962604	0	0	100	N	N	N/A	N	N/A	N/A	N	N	N	N	-
48	967391	0	0	100	N	N	N	Y	N	N/A	N	N	N	Y	SEROUS
49	966132	0	0	110	N	N	N/A	N	N/A	N/A	N	N	N	Y	SEROUS
50	965631	0	0	120	N	Y	Y	N	N/A	N/A	N	N	N	N	-
51	966866	0	0	60	N	Y	Y	Y	Y	Y	N	N	N	N	-
52	963822	0	0	50	N	N	Y	Y	Y	N	N	N	N	Y	SEROUS
53	6695	0	0	160	N	N	N/A	N	N/A	N/A	N	N	N	Y	SEROUS
54	966348	0	0	80	N	N	N/A	N	N/A	N/A	N	N	N	N	-
55	966022	0	0	120	N	Y	Y	Y	Y	Y	N	N	N	N	-
56	9111	0	0	90	N	N	Y	Y	Y	N	N	N	N	Y	SEROUS
57	230012	1	0	190	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	SEROUS
58	965396	0	0	40	N	N	N/A	Y	Y	N	N	N	N	N	-
59	611321	0	0	80	N	Y	N/A	N	N/A	N/A	N	N	N	N	-
60	963892	0	0	150	N	N	N/A	Y	Y	Y	N	Y	N	Y	BILIOUS
61	3943	0	0	95	N	Y	Y	N	N/A	N/A	N	N	N	N	-
62	961610	0	0	90	N	Y	Y	N	N/A	N/A	N	N	N	Y	SEROUS
63	962306	0	0	100	N	N	N/A	Y	N	N/A	N	N	N	Y	SEROUS
64	957719	0	0	65	N	Y	N/A	N	N/A	N/A	N	N	N	N	-
65	962054	0	0	105	N	N	N/A	N	N/A	N/A	N	N	N	N	-
66	813916	0	0	125	N	N	Y	Y	Y	Y	N	N	N	Y	SEROUS
67	528648	0	0	170	N	Y	Y	N	N/A	N/A	N	N	N	N	-
68	960684	0	0	95	N	N	N/A	N	N/A	N/A	N	N	N	N	-
69	959826	0	0	45	N	N	N/A	N	N/A	N/A	N	N	N	N	-

						PRESENTING COMPLAINTS						ULTRASOUND FINDINGS						INTRAOPERATIVE FINDINGS					
S. NO	MRD no	NAME	age	sex	Presenting Complaints duration (MONTHS)	ABD PAIN	HEAVINESS	INDIGESTION	INCIDENTAL FINDING	FEVER	Ultrasound NO OF STONES	Ultrasound IMPACTED STONE IN NECK OF GB	Ultrasound pericholycystic fluid	Ultrasound GB wall thickness	Ultrasound GB sludge	Ultrasound empyma	intra op NORMAL ANATOMY	DENSE ADHESIONS AT CALOTS TRIANGLE	CONTRACTED GB	ACUTELY INFLAMED GB	GANGRENOUS GB	EMPYEMA GB
70	959011	TS	54	M	2	Y	Y	Y	N	N	M	N	N	N	N	N	0	0	0	1	0	0
71	959111	RS	36	M	4	Y	Y	Y	N	Y	M	N	N	N	N	N	1	0	0	0	0	0
72	957816	RM	28	F	5	Y	Y	Y	N	Y	M	N	N	N	N	N	1	0	0	0	0	0
73	956736	NR	29	F	N	Y	Y	Y	Y	N	M	N	N	N	N	N	1	0	0	0	0	0
74	945864	HK	45	F	2	Y	Y	Y	N	Y	M	Y	Y	Y	Y	Y	0	0	0	0	0	1
75	956402	SS	45	M	3	Y	Y	Y	N	Y	S	Y	Y	Y	Y	Y	0	0	0	1	0	0
76	960075	GK	41	F	4	Y	Y	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
77	977784	SS	26	F	N	Y	Y	Y	N	Y	M	N	N	N	N	N	1	0	0	0	0	0
78	978656	M	49	F	9	Y	Y	Y	N	Y	M	N	N	N	Y	N	1	0	0	0	0	0
79	925919	SM	41	F	2	Y	Y	Y	N	Y	M	N	N	N	N	N	1	0	0	0	0	0
80	973783	U	55	F	0.5	Y	Y	Y	N	Y	M	Y	Y	Y	N	Y	0	0	0	0	0	1
81	977266	HK	60	F	1	Y	Y	Y	N	Y	S	N	N	N	Y	N	1	0	0	0	0	0
82	871826	HS	34	M	1	Y	Y	Y	N	Y	M	N	N	N	N	N	1	0	0	0	0	0
83	943806	DK	70	M	8	Y	Y	Y	N	Y	M	N	Y	Y	N	N	0	0	0	0	0	0
84	977214	J	18	F	2	Y	Y	Y	N	Y	M	N	N	N	N	N	1	0	0	0	0	0
85	935054	KC	65	F	10	Y	Y	Y	N	Y	M	N	N	N	N	N	0	1	0	0	0	0
86	930991	JK	48	F	1	Y	Y	N	N	Y	M	N	N	N	N	N	1	0	0	0	0	0
87	887149	KK	48	F	0.67	Y	Y	N	N	Y	M	N	N	N	N	N	1	0	0	0	0	0
88	978999	MT	28	F	3	N	N	N	Y	N	M	N	N	N	N	N	1	0	0	0	0	0
89	979154	BK	80	F	7	Y	Y	N	N	Y	M	N	N	N	N	N	1	0	0	0	0	0
90	223148	N	68	F	2	Y	Y	N	Y	N	S	Y	Y	N	N	Y	0	0	0	0	0	1
91	980013	PK	41	F	7	N	N	N	N	N	M	N	N	N	Y	N	1	0	0	0	0	0
92	942648	YS	22	M	7	N	N	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
93	979935	SD	61	F	7	N	N	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
94	980524	N	37	M	7	N	N	N	N	N	S	Y	N	Y	N	N	0	0	1	0	0	0
95	980526	SK	40	M	0.47	Y	Y	Y	N	N	M	N	N	Y	N	N	0	1	0	0	0	0
96	971460	AS	40	M	0.2	Y	Y	N	N	N	S	Y	Y	Y	Y	Y	0	0	1	1	0	0
97	900118	SL	62	F	6	N	N	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
98	979371	MA	38	M	6	N	N	N	N	N	S	N	N	N	Y	N	1	0	0	0	0	0
99	51672	JK	30	F	6	N	N	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
100	948488	CK	44	F	6	N	N	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
101	981996	UC	60	M	0.1	Y	Y	N	N	Y	M	Y	Y	Y	Y	N	0	0	0	1	0	0
102	982582	IB	56	F	6	Y	Y	N	N	Y	M	N	N	N	Y	N	1	0	0	0	0	0
103	983163	BS	26	M	6	Y	Y	N	N	Y	S	Y	Y	N	N	N	0	0	0	0	0	1
104	983214	JS	31	M	6	Y	Y	Y	N	Y	M	N	N	N	N	N	1	0	0	0	0	0
105	825395	SC	73	M	9	Y	Y	N	N	N	M	N	N	N	N	N	0	1	0	0	0	0
106	872065	ML	54	M	5	Y	Y	Y	N	Y	M	N	N	N	N	N	1	0	0	0	0	0
107	969891	SS	15	F	5	Y	Y	Y	N	Y	M	N	N	N	N	N	1	0	0	0	0	0
108	984011	AK	36	M	5	Y	Y	N	N	Y	S	N	N	N	N	N	1	0	0	0	0	0
109	150122	GS	71	M	5	Y	Y	N	N	Y	M	N	N	N	N	N	1	0	0	0	0	0
110	984606	GS	35	M	5	Y	Y	N	N	Y	M	N	N	N	Y	N	1	0	0	0	0	0
111	967418	GD	26	F	5	Y	Y	Y	N	Y	M	N	N	N	N	N	1	0	0	0	0	0
112	983628	MK	74	F	5	Y	Y	N	N	Y	M	N	N	N	N	N	1	0	0	0	0	0
113	985514	V	48	F	5	N	N	N	N	N	S	N	Y	Y	N	N	1	0	0	0	0	0
114	901561	SS	35	M	5	N	N	N	Y	N	M	N	N	N	N	N	1	0	0	0	0	0
115	987363	SK	27	F	4	N	N	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
116	987396	HK	55	F	5	Y	Y	N	N	Y	M	N	N	N	N	N	1	0	0	0	0	0
117	987593	N	59	F	5	Y	Y	N	N	Y	S	N	N	N	N	N	1	0	0	0	0	0
118	399390	P	43	M	5	N	N	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
119	988081	JK	56	F	0.67	Y	Y	Y	N	Y	M	N	N	N	N	N	1	0	0	0	0	0
120	986735	PT	45	F	1	Y	Y	Y	N	Y	M	N	N	N	N	N	1	0	0	0	0	0
NB	954638	BS	44	M	4	Y	N	Y	N	Y	M	N	N	N	N	N	0	1	0	0	0	0
122	987182	HK	56	F	1	Y	Y	N	N	Y	M	N	N	N	N	N	1	0	0	0	0	0
123	609264	VD	56	F	4	Y	Y	N	Y	Y	M	N	N	N	N	N	1	0	0	0	0	0
124	987797	RK	15	F	4	Y	N	Y	N	Y	S	Y	Y	Y	N	N	0	0	0	1	0	0
125	971634	RK	45	F	4	N	N	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
126	684742	NS	68	M	4	Y	Y	N	Y	Y	M	N	N	N	N	N	1	0	0	0	0	0
127	989392	SR	56	F	3	Y	Y	Y	N	Y	M	Y	Y	N	Y	N	0	0	0	0	0	1
128	986088	S	51	F	36	Y	Y	N	N	Y	M	N	Y	Y	N	N	0	0	0	0	0	1
129	988182	S	60	F	3	N	N	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
130	912019	RG	29	F	3	Y	Y	Y	N	Y	M	N	N	N	N	N	1	0	0	0	0	0
131	990234	LJ	42	M	3	Y	Y	Y	N	Y	M	N	N	N	N	N	1	0	0	0	0	0
132	989788	HK	43	F	3	Y	Y	N	N	Y	M	N	N	N	N	N	1	0	0	0	0	0
133	989743	RK	43	M	24	Y	Y	Y	N	Y	S	N	N	N	N	N	1	0	0	0	0	0
134	281581	M	28	F	2	Y	Y	Y	N	Y	M	N	N	N	N	N	1	0	0	0	0	0
135	988498	GK	64	F	2	Y	Y	Y	N	Y	M	N	N	N	Y	N	1	0	0	0	0	0
136	990408	A	50	F	0.7	N	N	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
137	989322	BS	40	M	0.67	Y	Y	N	N	Y	M	N	N	N	N	N	1	0	0	0	0	0

S. NO	MRD no	CHOLECYSTOGASTRIC AND CHOLECYSTODUOD FISTULA	MIRIZZI	duration of surgery	NEED FOR CONVERSION	PONV	NEED OF ANTIEMETIC	shoulder tip pain	RELIEVED WITH MEDICATION	SINGLE DRUG	ABDOMINAL DISTENSION	URINARY RETENTION	NEED FOR CATHETERIZATION	DRAIN	BIL SEROUS HGIC
70	959011	0	0	110	N	N	N/A	N	N/A	N/A	N	N	N	Y	SEROUS
71	959111	0	0	90	N	N	Y	Y	Y	N	N	N	N	N	-
72	957816	0	0	45	N	N	N/A	N	N/A	N/A	N	N	N	N	-
73	956736	0	0	45	N	N	N/A	N	N/A	N/A	N	N	N	N	-
74	945864	0	0	100	N	Y	Y	N	N/A	N/A	N	N	N	Y	SEROUS
75	956402	0	0	180	N	Y	N/A	Y	N	N/A	N	Y	Y	Y	SEROUS
76	960075	0	0	50	N	N	N/A	N	N/A	N/A	N	N	N	N	-
77	977784	0	0	40	N	N	N/A	N	N/A	N/A	N	N	N	N	-
78	978656	0	0	60	N	Y	N/A	N	N/A	N/A	N	N	N	N	-
79	925919	0	0	75	N	Y	N/A	N	N/A	N/A	N	N	N	N	-
80	973783	0	0	100	N	N	N/A	N	N/A	N/A	N	N	N	Y	SEROUS
81	977266	0	0	85	N	Y	Y	Y	Y	Y	N	N	N	N	-
82	871826	0	0	75	N	N	N	N	N/A	N/A	N	N	N	N	-
83	943806	1	0	180	N	Y	N/A	Y	Y	Y	Y	Y	Y	Y	SEROUS
84	977214	0	0	85	N	Y	Y	Y	Y	Y	N	N	N	N	-
85	935054	0	0	120	N	Y	Y	N	N/A	N/A	N	N	N	N	-
86	930991	0	0	60	N	N	N/A	N	N/A	N/A	N	N	N	N	-
87	887149	0	0	90	N	N	N/A	N	N/A	N/A	N	N	N	N	-
88	978999	0	0	30	N	N	N/A	N	N/A	N/A	N	N	N	N	-
89	979154	0	0	85	N	N	N/A	Y	Y	Y	Y	Y	Y	N	-
90	223148	0	0	90	N	N	N/A	N	N/A	N/A	N	N	N	Y	SEROUS
91	980013	0	0	145	N	Y	Y	Y	Y	N	N	N	N	N	-
92	942648	0	0	85	N	N	Y	N	N/A	N/A	N	N	N	N	-
93	979935	0	0	75	N	N	N/A	Y	Y	Y	N	N	N	N	-
94	980524	0	0	95	N	N	N/A	N	N/A	N/A	N	N	N	Y	SEROUS
95	980526	0	0	220	Y	Y	Y	Y	Y	N	N	N	N	Y	SEROUS
96	971460	0	0	175	N	Y	N/A	Y	Y	Y	N	N	N	Y	SEROUS
97	900118	0	0	85	N	N	N/A	N	N/A	N/A	N	N	N	N	-
98	979371	0	0	125	N	N	N/A	N	N/A	N/A	N	N	N	N	-
99	51672	0	0	115	N	Y	Y	Y	Y	Y	N	N	N	N	-
100	948488	0	0	95	N	Y	Y	Y	Y	Y	N	N	N	N	-
101	981996	0	0	140	N	Y	N/A	N	N/A	N/A	N	N	N	Y	SEROUS
102	982582	0	0	65	N	N	N/A	N	N/A	N/A	N	N	N	N	-
103	983163	0	0	85	N	N	N/A	N	N/A	N/A	N	N	N	Y	SEROUS
104	983214	0	0	75	N	N	Y	N	N/A	N/A	N	N	N	N	-
105	825395	0	0	200	Y	Y	N/A	N	N/A	N/A	Y	N	N	Y	SEROUS
106	872065	0	0	85	N	N	Y	N	N/A	N/A	N	N	N	N	-
107	969891	0	0	105	N	Y	Y	N	N/A	N/A	N	N	N	N	-
108	984011	0	0	125	N	N	N/A	Y	Y	N	N	N	N	N	-
109	150122	0	0	95	N	N	N/A	Y	Y	Y	N	N	N	N	-
110	984606	0	0	85	N	N	N/A	N	N/A	N/A	N	N	N	N	-
111	967418	0	0	85	N	Y	N/A	N	N/A	N/A	N	N	N	N	-
112	983628	0	0	105	N	N	N/A	Y	Y	Y	N	N	N	N	-
113	985514	0	0	75	N	N	N/A	Y	Y	N	N	N	N	N	-
114	901561	0	0	40	N	N	N/A	N	N/A	N/A	N	N	N	N	-
115	987363	0	0	80	N	Y	N/A	N	N/A	N/A	N	N	N	N	-
116	987396	0	0	75	N	N	N/A	N	N/A	N/A	N	N	N	N	-
117	987593	0	0	85	N	N	N/A	Y	N	N/A	N	N	N	N	-
118	399390	0	0	55	N	N	N/A	N	N/A	N/A	N	N	N	N	-
119	988081	0	0	65	N	N	N/A	N	N/A	N/A	N	N	N	N	-
120	986735	0	0	75	N	Y	Y	Y	Y	Y	N	N	N	N	-
NB	954638	0	0	100	N	N	Y	N	N/A	N/A	N	N	N	N	-
122	987182	0	0	85	N	N	N/A	Y	Y	Y	N	N	N	N	-
123	609264	0	0	75	N	N	N/A	N	N/A	N/A	N	N	N	N	-
124	987797	0	0	110	N	Y	Y	Y	Y	Y	N	N	N	N	-
125	971634	0	0	85	N	Y	Y	Y	Y	Y	N	N	N	N	-
126	684742	0	0	95	N	N	N/A	N	N/A	N/A	N	N	N	N	-
127	989392	0	0	140	N	Y	Y	Y	Y	N	N	N	N	Y	SEROUS
128	986088	0	0	100	N	N	N/A	Y	Y	N	N	N	N	Y	SEROUS
129	988182	0	0	85	N	N	N/A	N	N/A	N/A	N	N	N	N	-
130	912019	0	0	135	N	Y	Y	Y	Y	Y	N	N	N	N	-
131	990234	0	0	120	N	N	N/A	Y	Y	Y	N	N	N	N	-
132	989788	0	0	125	N	N	N/A	N	N/A	N/A	N	N	N	N	-
133	989743	0	0	65	N	N	Y	N	N/A	N/A	N	N	N	N	-
134	281581	0	0	70	N	Y	N/A	N	N/A	N/A	N	N	N	N	-
135	988498	0	0	90	N	Y	Y	N	N/A	N/A	N	N	N	N	-
136	990408	0	0	85	N	Y	N/A	N	N/A	N/A	N	N	N	N	-
137	989322	0	0	65	N	N	N/A	N	N/A	N/A	N	N	N	N	-

						PRESENTING COMPLAINTS					ULTRASOUND FINDINGS						INTRAOPERATIVE FINDINGS					
S. NO	MRD no	NAME	age	sex	Presenting Complaints duration (MONTHS)	ABD PAIN	HEAVINESS	INDIGESTION	INCIDENTAL FINDING	FEVER	Ultrasound NO OF STONES	Ultrasound IMPACTED STONE IN NECK OF GB	Ultrasound pericholycystic fluid	Ultrasound GB wall thickness	Ultrasound GB sludge	Ultrasound empyma	intra op NORMAL ANATOMY	DENSE ADHESIONS AT CALOTS TRIANGLE	CONTRACTED GB	ACUTELY INFLAMED GB	GANGRENOUS GB	EMPYEMA GB
138	948922	MK	65	F	2	Y	Y	N	N	Y	M	N	N	N	N	N	1	0	0	0	0	0
139	991047	GS	40	M	2	Y	Y	Y	N	Y	S	N	N	N	N	N	1	0	0	0	0	0
140	991366	DK	48	F	2	N	N	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
141	249016	SS	75	M	12	Y	Y	N	N	Y	M	N	N	N	N	N	1	0	0	0	0	0
142	991563	BC	85	M	6	Y	Y	Y	N	Y	M	N	Y	N	Y	N	0	0	0	0	1	0
143	991740	GK	50	M	12	Y	Y	Y	N	Y	M	N	N	N	N	N	1	0	0	0	0	0
144	521022	GK	52	M	15	Y	Y	N	N	Y	M	N	N	N	N	N	1	0	0	0	0	0
145	990483	KK	65	F	0.5	Y	Y	N	N	Y	M	N	N	N	N	N	0	0	0	1	0	0
146	992442	JD	27	F	15	Y	Y	Y	N	Y	M	N	N	N	N	N	1	0	0	0	0	0
147	666524	KC	56	F	12	N	Y	N	N	Y	M	N	N	N	N	N	1	0	0	0	0	0
148	99244O	DD	68	M	12	N	Y	Y	N	Y	M	N	N	N	N	N	1	0	0	0	0	0
149	5785	SM	52	F	10	Y	Y	Y	N	Y	M	N	N	N	N	N	1	0	0	0	0	0
150	976839	RS	30	M	18	Y	Y	N	N	Y	M	N	N	N	N	N	1	0	0	0	0	0
151	557212	RK	46	F	4	Y	Y	Y	N	Y	S	N	N	N	N	N	1	0	0	0	0	0
152	985454	GS	53	M	6	Y	Y	Y	N	Y	S	N	N	N	N	N	0	0	0	0	0	0
153	993430	JS	40	M	2	N	N	Y	N	N	M	N	N	N	Y	N	1	0	0	0	0	0
154	58055	AS	60	M	5	Y	Y	N	N	Y	M	N	Y	Y	N	N	1	0	0	0	0	0
155	995769	RK	53	M	4	Y	Y	Y	N	Y	M	Y	Y	N	N	N	0	0	0	0	0	1
156	996299	PR	28	F	5	Y	Y	Y	N	Y	M	N	N	N	N	N	1	0	0	0	0	0
157	993145	NK	53	F	12	Y	Y	Y	N	Y	S	Y	N	N	N	N	1	0	0	0	0	0
158	996664	SR	55	F	3	Y	Y	Y	N	Y	M	N	N	N	N	N	1	0	0	0	0	0
159	997151	S	32	F	9	Y	N	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
160	997594	NK	52	F	6	Y	Y	Y	N	N	S	N	N	N	N	N	1	0	0	0	0	0
161	3406	M	51	F	0.03	Y	N	N	N	N	M	Y	Y	Y	N	N	0	0	0	1	0	0
162	204587	SK	70	M	9	Y	N	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
163	990117	KK	40	F	8	Y	Y	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
164	68731	PG	60	M	6	Y	Y	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
165	999982	BK	45	F	24	Y	Y	Y	N	N	M	N	N	N	N	N	0	1	0	0	0	0
166	999448	AK	56	M	6	Y	Y	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
167	988356	RV	47	F	3	Y	Y	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
168	5496	SD	39	F	2	Y	Y	Y	N	N	M	N	N	N	N	Y	0	0	0	0	0	1
169	466830	SD	54	F	12	Y	Y	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
170	984726	PS	62	M	36	Y	Y	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
171	992954	SK	60	F	8	Y	N	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
172	984808	BD	57	M	4	Y	Y	N	N	N	M	N	N	N	Y	N	1	0	0	0	0	0
173	1000835	NS	60	M	5	Y	N	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
174	856536	HP	54	M	6	Y	N	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
175	1001103	SB	31	F	5	Y	N	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
176	1002142	RM	34	F	6	Y	Y	Y	N	N	M	N	N	N	Y	N	1	0	0	0	0	0
177	739256	SR	52	M	8	Y	N	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
178	980233	RS	24	M	7	Y	N	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
179	981441	MY	26	F	5	Y	N	Y	N	N	S	N	N	N	Y	N	1	0	0	0	0	0
180	995849	RC	72	M	7	Y	N	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
181	1002539	HS	63	M	4	Y	Y	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
182	5462	MK	42	F	5	Y	N	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
183	889614	VR	44	F	8	Y	N	Y	N	N	M	N	N	N	Y	N	1	0	0	0	0	0
184	216589	M	24	M	15	Y	N	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
185	889437	N	32	M	2	Y	Y	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
186	890639	RK	48	F	7	Y	Y	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
187	698328	M	44	F	6	Y	Y	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
188	978656	MM	49	F	24	Y	N	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
189	223148	ND	68	F	4	Y	N	Y	N	N	S	N	N	N	N	N	1	0	0	0	0	0
190	980529	NM	37	F	6	Y	N	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
191	764619	AD	33	F	12	N	Y	N	N	N	M	N	N	N	Y	N	0	1	0	0	1	0
192	217661	RG	40	F	N	N	N	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
193	315190	DL	64	M	9	N	N	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
194	771120	G	60	F	18	N	Y	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
195	69192	JS	50	M	0.5	Y	Y	Y	N	N	S	Y	Y	Y	Y	Y	0	0	0	1	0	0
196	780005	JK	68	F	24	N	N	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
197	88570	KD	38	M	5	N	N	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
198	175668	KM	36	F	10	N	N	N	N	N	S	N	N	N	N	N	1	0	0	0	0	0
199	772958	P	50	F	2	N	N	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
200	773377	R	51	F	8	N	Y	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
201	763915	S	27	M	12	Y	Y	N	N	N	S	Y	N	N	N	N	1	0	0	0	0	0
202	786667	SS	80	M	36	N	Y	Y	N	N	M	N	N	N	N	N	0	0	1	0	0	0
203	762720	SK	48	F	8	N	Y	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
204	792595	S	64	F	4	Y	N	N	N	N	S	N	N	N	N	N	1	0	0	0	0	0
205	760012	SB	44	M	5	Y	N	Y	N	Y	M	N	N	N	N	N	0	0	0	1	0	0

S. NO	MRD no	CHOLECYSTOGASTRIC AND CHOLECYSTODUOD FISTULA	MIRIZZI	duration of surgery	NEED FOR CONVERSION	PONV	NEED OF ANTIEMETIC	shoulder tip pain	RELIEVED WITH MEDICATION	SINGLE DRUG	ABDOMINAL DISTENSION	URINARY RETENTION	NEED FOR CATHETERIZATION	DRAIN	BIL SEROUS HGIC
138	948922	0	0	120	N	N	N/A	Y	Y	Y	N	N	N	N	-
139	991047	0	0	60	N	N	Y	N	N/A	N/A	N	N	N	N	-
140	991366	0	0	75	N	N	N/A	N	N/A	N/A	N	N	N	N	-
141	249016	0	0	70	N	N	N/A	N	N/A	N/A	Y	N	N	N	-
142	991563	0	0	140	Y	Y	Y	Y	Y	N	Y	Y	N	Y	SEROUS
143	991740	0	0	90	N	Y	Y	N	N/A	N/A	N	N	N	N	-
144	521022	0	0	110	N	N	N/A	N	N/A	N/A	N	N	N	N	-
145	990483	0	0	95	N	N	N/A	N	N/A	N/A	N	N	N	Y	SEROUS
146	992442	0	0	225	N	Y	Y	N	N/A	N/A	N	N	N	N	-
147	666524	0	0	55	N	N	N/A	N	N/A	N/A	N	N	N	N	-
148	99244O	0	0	65	N	N	Y	N	N/A	N/A	N	N	N	N	-
149	5785	0	0	35	N	N	N/A	N	N/A	N/A	N	N	N	N	-
150	976839	0	0	25	N	N	N/A	N	N/A	N/A	N	N	N	N	-
151	557212	0	0	80	N	Y	Y	Y	Y	N	N	N	N	N	-
152	985454	0	1	160	N	Y	Y	Y	Y	N	Y	Y	N	Y	SEROUS
153	993430	0	0	55	N	N	N/A	N	N/A	N/A	N	N	N	N	-
154	58055	0	0	100	N	N	N/A	N	N/A	N/A	N	N	N	N	-
155	995769	0	0	160	N	N	N/A	N	N/A	N/A	N	N	N	Y	SEROUS
156	996299	0	0	75	N	Y	Y	Y	Y	Y	N	N	N	N	-
157	993145	0	0	65	N	Y	N/A	N	N/A	N/A	N	N	N	N	-
158	996664	0	0	45	N	N	N/A	N	N/A	N/A	N	N	N	N	-
159	997151	0	0	35	N	N	N/A	N	N/A	N/A	N	N	N	N	-
160	997594	0	0	80	N	Y	N/A	N	N/A	N/A	N	N	N	N	-
161	3406	0	0	75	N	N	N/A	Y	Y	N	N	N	N	Y	SEROUS
162	204587	0	0	65	N	N	N/A	N	N/A	N/A	N	N	N	N	-
163	990117	0	0	70	N	Y	N/A	N	N/A	N/A	N	N	N	N	-
164	68731	0	0	55	N	N	N/A	N	N/A	N/A	Y	N	N	N	-
165	999982	0	0	30	N	N	N/A	N	N/A	N/A	N	N	N	Y	SEROUS
166	999448	0	0	65	N	N	N/A	N	N/A	N/A	N	N	N	N	-
167	988356	0	0	60	N	N	N/A	N	N/A	N/A	N	N	N	N	-
168	5496	0	0	75	N	Y	N/A	N	N/A	N/A	N	N	N	Y	SEROUS
169	466830	0	0	85	N	N	N/A	N	N/A	N/A	Y	N	N	N	-
170	984726	0	0	55	N	N	N/A	N	N/A	N/A	Y	N	N	N	-
171	992954	0	0	65	N	N	N/A	Y	Y	Y	N	N	N	N	-
172	984808	0	0	70	N	N	N/A	N	N/A	N/A	N	N	N	N	-
173	1000835	0	0	95	N	N	N/A	Y	Y	Y	Y	Y	Y	N	-
174	856536	0	0	45	N	N	N/A	N	N/A	N/A	N	N	N	N	-
175	1001103	0	0	35	N	N	N/A	N	N/A	N/A	Y	N	N	N	-
176	1002142	0	0	60	N	Y	N/A	N	N/A	N/A	N	N	N	N	-
177	739256	0	0	55	N	N	N/A	N	N/A	N/A	N	N	N	N	-
178	980233	0	0	65	N	N	N/A	N	N/A	N/A	N	N	N	N	-
179	981441	0	0	25	N	N	N/A	N	N/A	N/A	N	N	N	N	-
180	995849	0	0	65	N	N	N/A	N	N/A	N/A	N	N	N	N	-
181	1002539	0	0	45	N	N	N/A	N	N/A	N/A	N	N	N	N	-
182	5462	0	0	55	N	Y	N/A	N	N/A	N/A	N	N	N	N	-
183	889614	0	0	65	N	Y	N/A	N	N/A	N/A	N	N	N	N	-
184	216589	0	0	75	N	N	N/A	N	N/A	N/A	N	N	N	N	-
185	889437	0	0	65	N	N	Y	N	N/A	N/A	N	N	N	N	-
186	890639	0	0	135	N	Y	Y	N	N/A	N/A	N	N	N	N	-
187	698328	0	0	55	N	N	N/A	N	N/A	N/A	N	N	N	N	-
188	978656	0	0	65	N	Y	Y	Y	Y	Y	N	N	N	N	-
189	223148	0	0	85	N	Y	Y	Y	Y	Y	N	N	N	N	-
190	980529	0	0	145	N	Y	Y	N	N/A	N/A	Y	N	N	N	-
191	764619	0	0	95	N	N	N/A	Y	Y	Y	N	N	N	Y	SEROUS
192	217661	0	0	55	N	N	N/A	N	N/A	N/A	N	N	N	N	-
193	315190	0	0	75	N	N	Y	N	N/A	N/A	N	N	N	N	-
194	771120	0	0	70	N	Y	Y	Y	Y	N	N	N	N	N	-
195	69192	0	0	125	N	Y	Y	Y	Y	Y	N	N	N	Y	SEROUS
196	780005	0	0	135	N	N	N/A	N	N/A	N/A	N	N	N	N	-
197	88570	0	0	85	N	N	Y	N	N/A	N/A	N	N	N	N	-
198	175668	0	0	75	N	N	N/A	Y	Y	N	N	N	N	N	-
199	772958	0	0	65	N	Y	N/A	N	N/A	N/A	N	N	N	N	-
200	773377	0	0	145	N	N	N/A	N	N/A	N/A	N	N	N	N	-
201	763915	0	0	90	N	N	N/A	N	N/A	N/A	N	N	N	N	-
202	786667	0	0	130	Y	Y	Y	Y	Y	Y	N	Y	N	Y	SEROUS
203	762720	0	0	90	N	Y	Y	N	N/A	N/A	N	N	N	N	-
204	792595	0	0	100	N	N	N/A	N	N/A	N/A	N	N	N	N	-
205	760012	0	0	140	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	SEROUS

						PRESENTING COMPLAINTS					ULTRASOUND FINDINGS						INTRAOPERATIVE FINDINGS					
S. NO	MRD no	NAME	age	sex	Presenting Complaints duration (MONTHS)	ABD PAIN	HEAVINESS	INDIGESTION	INCIDENTAL FINDING	FEVER	Ultrasound NO OF STONES	Ultrasound IMPACTED STONE IN NECK OF GB	Ultrasound pericholycystic fluid	Ultrasound GB wall thickness	Ultrasound GB sludge	Ultrasound empyma	intra op NORMAL ANATOMY	DENSE ADHESIONS AT CALOTS TRIANGLE	CONTRACTED GB	ACUTELY INFLAMED GB	GANGRENOUS GB	EMPYEMA GB
206	766589	SK	64	M	6	N	N	Y	N	Y	M	N	N	N	N	N	0	0	0	1	0	0
207	609264	VR	50	F	5	N	Y	Y	N	Y	M	N	N	N	N	N	1	0	0	0	0	0
208	984011	AK	36	M	6	Y	Y	N	N	N	S	Y	Y	Y	N	N	0	0	0	0	0	0
209	988498	GK	65	F	8	Y	Y	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
210	984922	MK	65	F	7	Y	Y	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
211	991563	BC	85	F	5	Y	Y	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
212	991366	JK	48	M	7	N	Y	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
213	1003114	H	10	M	4	Y	Y	N	N	N	S	N	N	N	N	N	1	0	0	0	0	0
214	991563	BC	85	M	5	Y	Y	N	N	N	M	N	N	N	N	N	0	0	0	0	1	0
215	875995	K	30	F	8	Y	Y	Y	N	N	M	N	N	N	Y	N	0	0	0	0	0	0
216	901588	HR	74	M	15	Y	Y	Y	N	N	M	Y	N	N	N	N	0	0	1	0	0	0
217	897030	RK	60	M	2	Y	N	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
218	890705	BK	65	F	7	Y	Y	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
219	889162	AK	30	M	2	Y	N	N	N	N	S	Y	N	N	N	N	1	0	0	0	0	0
220	886937	JK	49	F	3	N	N	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
221	890181	KS	75	M	4	N	N	Y	N	N	M	N	N	N	N	N	0	0	1	0	0	0
222	565829	GS	39	M	5	N	Y	N	N	N	S	N	N	N	N	N	0	0	0	0	0	0
223	891138	RD	36	F	15	Y	N	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
224	881090	NG	29	F	12	Y	N	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
225	892002	GD	57	F	6	N	N	N	N	N	M	N	N	N	N	N	0	0	0	0	0	0
226	890287	D	28	F	N	Y	N	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
227	891355	GW	65	M	N	Y	N	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
228	891287	GK	34	F	9	Y	Y	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
229	681538	TR	47	M	9	Y	N	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
230	889586	RK	37	F	9	Y	Y	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
231	892296	AD	24	F	8	Y	Y	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
232	888617	NJ	61	M	8	N	Y	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
233	893424	RK	85	M	8	Y	N	Y	N	N	M	N	N	N	N	N	0	0	0	0	0	0
234	891556	MK	54	F	8	Y	N	N	N	N	M	N	N	N	Y	N	1	0	0	0	0	0
235	894263	PJ	41	F	8	Y	N	N	N	N	M	N	N	N	N	N	0	0	0	1	0	0
236	894315	HK	41	F	8	N	Y	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
237	894326	RB	34	M	8	Y	Y	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
238	894075	RG	57	F	8	Y	Y	Y	N	N	M	N	N	N	Y	N	1	0	0	0	0	0
239	453257	PK	55	M	7	Y	N	N	N	N	M	N	N	N	N	N	0	0	0	0	0	1
240	395278	MS	50	M	7	Y	N	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
241	892381	KK	49	F	7	Y	Y	Y	N	N	S	N	N	N	Y	N	0	0	0	0	0	0
242	896279	DK	39	F	7	Y	Y	Y	N	N	M	N	N	N	N	N	0	0	0	0	0	0
243	857492	RR	52	F	7	Y	N	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
244	894214	KK	60	F	5	Y	N	N	N	N	M	N	N	N	N	N	0	1	0	0	0	0
245	896472	H	29	F	7	Y	Y	Y	N	N	M	N	N	N	Y	N	1	0	0	0	0	0
246	894497	SD	50	F	6	Y	Y	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
247	897096	GD	50	F	6	Y	N	Y	N	N	M	N	N	N	N	N	0	1	0	0	0	0
248	884204	KJ	51	F	6	Y	N	N	N	N	M	N	N	N	N	N	0	0	0	0	0	0
249	889594	DK	60	F	0.2	N	N	N	N	N	M	N	N	N	N	N	0	0	0	1	0	0
250	896955	KK	31	M	6	Y	N	Y	N	N	M	N	N	N	N	N	1	0	0	0	0	0
251	896717	SD	77	F	6	Y	Y	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
252	896401	PR	52	F	6	N	Y	Y	N	N	M	N	N	N	N	N	0	0	0	0	0	1
253	897737	SK	35	F	6	Y	Y	N	N	N	M	N	N	N	N	N	1	0	0	0	0	0
254	895757	RD	42	F	6	N	Y	Y	N	N	M	N	N	N	Y	N	1	0	0	0	0	0
255	897974	SK	30	F	6	Y	N	Y	N	N	M	N	N	N	N	N	0	0	0	0	0	0
256	818098	TJ	27	M	5	Y	Y	N	N	Y	M	N	N	N	N	N	0	0	1	0	0	0
257	480045	S	29	M	5	Y	Y	Y	N	Y	M	N	N	N	N	N	0	0	0	0	0	1
258	673930	SK	24	M	5	Y	Y	Y	N	Y	M	N	N	N	Y	N	1	0	0	0	0	0
259	891171	DC	80	M	5	Y	Y	N	N	Y	M	N	N	N	N	N	0	0	1	0	0	0
260	899961	DS	63	M	5	Y	Y	N	N	Y	M	N	N	N	N	N	0	0	0	0	0	1
261	900065	H	65	M	5	Y	Y	Y	N	Y	S	N	N	N	Y	N	1	0	0	0	0	0
262	895613	PK	30	F	5	Y	Y	Y	N	Y	M	N	N	N	N	N	0	0	0	0	0	1
263	834957	S	55	F	5	Y	Y	N	N	Y	M	N	N	N	N	N	1	0	0	0	0	0
264	270176	HK	28	F	5	Y	Y	N	N	Y	M	N	N	N	N	N	1	0	0	0	0	0
265	823786	MH	74	M	5	Y	Y	Y	N	Y	M	N	N	N	Y	N	0	0	1	0	0	0
266	886801	GS	24	M	5	Y	Y	Y	N	Y	M	N	N	N	N	N	1	0	0	0	0	0
267	899150	DS	58	F	5	Y	Y	Y	N	Y	M	N	N	N	N	N	1	0	0	0	0	0

S. NO	MRD no	CHOLECYSTOGASTRIC AND CHOLECYSTODUOD FISTULA	MIRIZZI	duration of surgery	NEED FOR CONVERSION	PONV	NEED OF ANTIEMETIC	shoulder tip pain	RELIEVED WITH MEDICATION	SINGLE DRUG	ABDOMINAL DISTENSION	URINARY RETENTION	NEED FOR CATHETERIZATION	DRAIN	BIL SEROUS HGIC
206	766589	0	0	120	N	Y	Y	N	N/A	N/A	N	N	N	Y	SEROUS
207	609264	0	0	40	N	N	N/A	N	N/A	N/A	N	N	N	N	-
208	984011	1	0	160	N	N	N/A	Y	Y	N	N	N	N	Y	SEROUS
209	988498	0	0	75	N	Y	Y	Y	Y	Y	N	N	N	N	-
210	984922	0	0	100	N	N	N/A	Y	Y	Y	N	N	N	N	-
211	991563	0	0	85	N	N	N/A	N	N/A	N/A	N	N	N	N	-
212	991366	0	0	75	N	N	Y	N	N/A	N/A	N	N	N	N	-
213	1003114	0	0	80	N	N	N/A	N	N/A	N/A	N	N	N	N	-
214	991563	0	0	85	N	N	N/A	Y	N	N/A	N	N	N	Y	SEROUS
215	875995	0	1	150	N	Y	Y	Y	Y	N	N	N	N	Y	SEROUS
216	901588	0	0	60	N	N	Y	Y	Y	Y	N	N	N	Y	SEROUS
217	897030	0	0	90	N	N	N/A	N	N/A	N/A	N	N	N	N	-
218	890705	0	0	120	N	N	N/A	N	N/A	N/A	N	N	N	N	-
219	889162	0	0	85	N	N	N/A	N	N/A	N/A	N	N	N	N	-
220	886937	0	0	90	N	N	N/A	N	N/A	N/A	N	N	N	N	-
221	890181	0	0	145	N	Y	Y	Y	Y	N	N	N	N	Y	SEROUS
222	565829	0	0	85	N	N	N/A	N	N/A	N/A	N	N	N	Y	SEROUS
223	891138	0	0	75	N	N	N/A	Y	Y	Y	N	N	N	N	-
224	881090	0	0	140	N	N	N/A	Y	Y	Y	N	N	N	N	-
225	892002	0	1	95	N	N	N/A	Y	Y	Y	N	N	N	Y	SEROUS
226	890287	0	0	75	N	N	N/A	N	N/A	N/A	N	N	N	N	-
227	891355	0	0	85	N	N	N/A	N	N/A	N/A	N	N	N	N	-
228	891287	0	0	125	N	Y	Y	Y	Y	Y	N	N	N	N	-
229	681538	0	0	115	N	N	N/A	N	N/A	N/A	N	N	N	N	-
230	889586	0	0	95	N	N	N/A	N	N/A	N/A	N	N	N	N	-
231	892296	0	0	75	N	N	N/A	N	N/A	N/A	N	N	N	N	-
232	888617	0	0	65	N	N	N/A	N	N/A	N/A	N	N	N	N	-
233	893424	0	1	140	N	Y	Y	Y	Y	Y	N	N	N	Y	SEROUS
234	891556	0	0	75	N	N	N/A	Y	Y	Y	N	N	N	N	-
235	894263	0	0	180	N	N	N/A	Y	Y	N	N	N	N	Y	SEROUS
236	894315	0	0	85	N	N	N/A	Y	Y	Y	N	N	N	N	-
237	894326	0	0	105	N	N	N/A	Y	Y	Y	N	N	N	N	-
238	894075	0	0	125	N	Y	Y	N	N/A	N/A	N	N	N	N	-
239	453257	0	0	180	N	Y	N/A	Y	Y	Y	N	N	N	Y	SEROUS
240	395278	0	0	85	N	N	N/A	N	N/A	N/A	N	N	N	N	-
241	892381	0	1	85	N	Y	Y	Y	Y	N	N	N	N	N	-
242	896279	0	0	105	N	Y	Y	Y	Y	N	N	N	N	N	-
243	857492	0	0	75	N	N	N/A	N	N/A	N/A	N	N	N	Y	SEROUS
244	894214	0	0	180	N	Y	N/A	Y	Y	Y	N	N	N	Y	SEROUS
245	896472	0	0	125	N	Y	Y	N	N/A	N/A	N	N	N	N	-
246	894497	0	0	75	N	N	N/A	N	N/A	N/A	N	N	N	N	-
247	897096	0	0	85	N	N	N/A	Y	Y	N	Y	Y	N	Y	SEROUS
248	884204	0	1	160	Y	N	N/A	Y	Y	Y	N	N	N	Y	SEROUS
249	889594	0	0	90	N	N	N/A	Y	Y	Y	N	N	N	Y	SEROUS
250	896955	0	0	75	N	N	Y	N	N/A	N/A	N	N	N	N	-
251	896717	0	0	60	N	N	N/A	N	N/A	N/A	N	N	N	N	-
252	896401	0	0	180	Y	Y	Y	Y	Y	N	Y	Y	N	Y	SEROUS
253	897737	0	0	75	N	N	N/A	N	N/A	N/A	Y	N	N	N	-
254	895757	0	0	60	N	N	N/A	N	N/A	N/A	N	N	N	N	-
255	897974	0	1	145	Y	N	N/A	Y	Y	Y	N	N	N	Y	SEROUS
256	818098	0	0	95	N	N	N/A	Y	Y	Y	N	N	N	Y	SEROUS
257	480045	0	0	90	N	N	Y	N	N/A	N/A	N	N	N	Y	SEROUS
258	673930	0	0	100	N	N	Y	N	N/A	N/A	N	N	N	N	-
259	891171	0	0	85	N	N	N/A	N	N/A	N/A	N	N	N	Y	SEROUS
260	899961	0	0	135	N	N	N/A	N	N/A	N/A	N	N	N	Y	SEROUS
261	900065	0	0	120	N	Y	Y	N	N/A	N/A	N	N	N	N	-
262	895613	0	0	125	N	N	N/A	Y	Y	N	N	N	N	Y	SEROUS
263	834957	0	0	65	N	N	N/A	N	N/A	N/A	N	N	N	N	-
264	270176	0	0	70	N	N	N/A	N	N/A	N/A	N	N	N	N	-
265	823786	0	0	90	N	Y	Y	Y	Y	N	N	N	N	Y	SEROUS
266	886801	0	0	85	N	N	Y	N	N/A	N/A	N	N	N	N	-
267	899150	0	0	65	N	Y	Y	Y	Y	Y	N	N	N	N	-

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No. BFUHS/2K21p-TH/ 5054 **Date** 30/4/2021

The Principal,
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Subject: **Approval of Plan of Thesis.**

This is to inform you that the Faculty of Medical Sciences in its meeting held on 22.01.2021 has approved the plan of thesis of **Dr. Kshish Aggarwal,** a student of your college for **MS General Surgery** along with the names of Supervisor/Co-Supervisor as under:-

Topic Plan of Thesis
Evaluation of immediate post operative complications after laparoscopic cholecystectomy

Supervisor
Dr. Ravinder Pal Singh
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The student has to submit the three copies of thesis (along with PDF format) , to the Controller of Examinations, BFUHS, Faridkot, at least six months before the commencement of theory examination, if he/she is otherwise eligible to take the examination. He /She must directed to attach a photocopy of this letter with the forwarding letter while submitting thesis to the University along with the letter of approval of University for change of supervisor/Co-Supervisor, change of topic,(if any).

Dr. S P Singh MS(Oph)
Controller of Examinations

Note :

1. ***If any discrepancy found regarding topic of thesis or Supervisor/Co-Supervisor, inform undersigned within one month after issue of this letter.***
2. *The student may submit the thesis as per the schedule already conveyed i.e for May/June examination 30th Nov of the preceding the year of examination and for Nov/Dec examinations 31st May of the year of examination.*

EVALUATION OF IMMEDIATE POST OPERATIVE COMPLICATIONS AFTER LAPAROSCOPIC CHOLECYSTECTOMY

THESIS PROPOSAL

FOR APPROVAL OF SUBJECT OF THESIS TO BE SUBMITTED

IN PARTIAL FULFILMENT OF THE REQUIREMENTS

FOR THE DEGREE OF

M.S.

in

Surgery

OF THE

BABA FARID UNIVERSITY OF HEALTH SCIENCES
FARIDKOT

November, 2019

Dr Kshish Aggarwal

DEPARTMENT OF SURGERY
DAYANAND MEDICAL COLLEGE AND HOSPITAL
LUDHIANA

ABSTRACT OF PLAN OF THESIS

Title	EVALUATION OF IMMEDIATE POST OPERATIVE COMPLICATIONS AFTER LAPAROSCOPIC CHOLECYSTECTOMY
For the degree of	Master of Surgery
Name of the candidate	Dr. Kshish Aggarwal
Supervisor	Dr. Ravinder Pal Singh, Professor, Department of General Surgery, DMCH
Co-supervisors	Dr. Atul Mishra, Professor, Department of General Surgery, DMCH Dr. Vandana Midha, Professor, Department of Medicine, DMCH
Institution	Dayanand Medical College & Hospital, Ludhiana
University	Baba Farid University of Health Sciences, Faridkot

Introduction: Laparoscopic cholecystectomy has received an immense amount of publicity as the revolutionary new method for the treatment of gall stone disease. This technique represents not the revolution but the evolution of surgery and the culmination of nearly 100 years.In the developed countries like USA and CANADA laparoscopic cholecystectomy has become a day care surgery but such a trend is still not seen INDIA. The feasibility of day care laparoscopic cholecystectomy is very much dependent on the post operative period of the patient with main emphasis on pain management and relief from nausea and vomiting . In this study we aim to evaluate the immediate post operative complications following laparoscopic cholecystectomy.

Aims: To evaluate the immediate complications after elective Laparoscopic cholecystectomy example nausea, vomiting, abdominal distension, shoulder pain and urinary retention , intrabdominal bleeding , etc.

Materials and methods: This is a prospective study and will be held in the Department Of Surgery in Dayanand Medical College And Hospital, Ludhiana. This study will be conducted in patients who are undergoing laparoscopic cholecystecctomy

Clinical significance: Laparoscopic cholecystectomy is the standard surgery of choice for gall bladder disease and therefore is one of the most common surgeries performed nowadays. Thus it is important to study and evaluate the immediate complications associated with the procedure.

Keywords: Laparoscopic cholecystectomy, complications, Post Op Nausea vomiting (ponv) , bleeding , shoulder tip pain , urinary retention

(Signature)	(Signature)	(Signature)	(Signature)	(Signature)
Candidate	Co-supervisor	Co-supervisor	Supervisor	Principal

CERTIFICATE OF FACILITIES AVAILABLE

This is to certify that the facilities for work on the subject of thesis titled exist **EVALUATION OF IMMEDIATE POST OPERATIVE COMPLICATIONS AFTER LAPAROSCOPIC CHOLECYSTECTOMY** in the Department of Surgery, DMC&H, Ludhiana and will be provided to the candidate. We will see that the data being included in the thesis is genuine and is collected by the candidate herself under our supervision and guidance.

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APPROVAL PROFORMA
BY
RESEARCH & ETHICAL COMMITTEE
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Name of candidate	Dr. Kshish Aggarwal
Department	GENERAL SURGERY
Topic of Thesis	Evaluation Of Immediate Post Operative Complications After Laparoscopic Cholecystectomy
Likely date of appearing in PG examination	May-June 2022
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PROFORMA FOR REGISTRATION OF SUBJECT FOR DISSERTATION

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4	DATE OF ADMISSION OF COURSE	06/05/2019
5	TITLE OF THE TOPIC	EVALUATION OF IMMEDIATE POST OPERATIVE COMPLICATIONS AFTER LAPAROSCOPIC CHOLECYSTECTOMY

6. BRIEF RESUME OF THE INTENDED WORK

6.1 NEED FOR THE STUDY

Laparoscopic cholecystectomy has replaced open cholecystectomy for the treatment of gall stone disease and has now become the treatment of choice for symptomatic cholelithiasis.[1] Cholelithiasis was first described in 1420 by a Florentine pathologist,Antonio Benivenius.[2,3] Further, Jean-Louis Petit, the founder of gall bladder surgery in 1733 suggested removal of gall stones and drainage of gall bladder.[4] The operative treatment of gall stones really began with the pioneer work of Ephraim Mcdowell (1780-1830), who in 1809, was the surgeon to open the abdomen with the object of removing an ovarian cyst.[5] Cholecystectomy is the commonest operation of the biliary tract and the second most common operative procedure performed today.[6,7] The first open cholecystectomy was performed on July 15th, 1882, by a German surgeon Carl Johann August Langenbuch at the Lazarus Krankenhaus, Berlin, on a 43 year old man.[8,9] With the advances in the technique during the later years, the Russian Lukichev in 1983 performed the first laparoscopic cholecystectomy, but its publication was limited to the Russian literature, and it remained unknown.[8,10] However, the first actual laparoscopic cholecystectomy was performed by Professor Dr Erich Muhe in Boblingen, Germany, on September 12, 1985. he performed 94 such procedures before Phillip Mouret had performed his first laparoscopic cholecystectomy in 1987.[11,12] However, this innovative technique was not widely accepted. Instead, it was Mouret who was responsible for laparoscopic surgery achieving medical respectability by performing the first laparoscopic cholecystectomy.[8,13] In spite of his early rejection in 1986, at the 109th German Surgical Society(GSS) Congress on April, 1992, Muhe received the GSS anniversary Award for his pioneering work in endoscopic surgery.[12] In India , Professor Tehempton E Udwadia [14] from Mumbai performed the first laparoscopic cholecystectomy in 1990 and presented the paper at the 10th world congress of digestive surgery at New Delhi in the same year (1990) Since then laparoscopic

cholecystectomy has received an immense amount of publicity as the revolutionary new method for the treatment of gall stone disease[15]. Initially there was hesitation on the part of the surgeons to accept this laparoscopic procedure but the advantages were quiet evident and in addition there was rising patient demand for the procedure, so now over the years laparoscopic cholecysytectomy has emerged over the open cholecystectomy as the "Gold Standard" for surgical treatment of symptomatic gall stones.[8] Rapidly escalating patient demand and the initial limited availability of instrumentation and appropriately trained surgeons combined to create an aura of uniqueness for laparoscopic cholecystectomy. Minimal invasive surgery holds an important position in today"s practice. A large number of surgical procedures are performed laparoscopically with laparoscopic cholecystectomy being one of the most popular. The benefits of laparoscopic cholecystectomy compared with open surgery are well known.Laparoscopic operative procedures have revolutionized surgery with many advantages: a smaller and a more cosmetic incision, reduced blood loss, reduced postoperative stay and pain, decreased risk of surgery and anesthesia related complications, which is reflected in patient"s earlier return to normal routine life and work activities. The new procedure has been widely accepted and adopted by surgical community and has become new "gold standard" for management of cholelithiasis.[14] As the experience advances further, a few centers have recently shown that the operation is safe and feasible even as an out patient procedure in properly selected and pre counseled patients, so one of the latest advancement in the field of laparoscopic surgery is the introduction of Day Care surgery. Day care surgery is described as the admission of selected patients for a planned surgical procedure, returning home on the very same day after the operative procedure. Ability to provide high quality and cost effective care has made ambulatory surgery one of the fastest growing area in the health care system all over the world. Primary aim of the day care surgery is to avoid special hospitalization but the patient safety is the ultimate goal of the concept. Although in some countries like U.S.A. and Canada the concept of day care

laparoscopic cholecystectomy has already been widely accepted with recent reports focusing less on feasibility but rather on the possibility to apply wider inclusion criteria. In European countries the concept of treatment of symptomatic cholelithiasis on an outpatient basis is still infrequent.[15] Reddick and Oslen first reported an ambulatory laparoscopic cholecystectomy in 1990.[16] The safety of ambulatory laparoscopic cholecystectomy has been reported through its increased use.

Benefits of Day Care Surgery 1) Reduced hospital stay. 2) Early resumption of day to day activity. 3) Cost effectiveness. 4) Reduces anxiety of the patient. 5) Faster recovery in familiar surroundings. 6) Improved patient satisfaction. 7) Decreased hospital acquired infections. The feasibility of Day Care laparoscopic cholecystectomy is very much dependent on the post operative period of the patient. An uneventful post operative period is quite essential for the patient to gain confidence in the concept. Even in a country like India were the surgical advancement is moving at a very fast pace, the concept of Day Care surgery is still not widely acceptable to the practicing surgeons because of gthe limited literature available on the subject from India . Most of the surgeons in India follow the concept of observing the patient overnight post laparoscopic chloecystectomy. Though some cases of Day Care surgery have been reported in the literature from India. The concept of Day Care surgery is very beneficial for a developing country because it not only leads to cost containment but also better utilization of the health care resources The purpose of present study is to evaluate immediate post operative complications following laparoscopic cholecystectomy so that the feasibility and outcome of day care laparoscopic cholecystectomy can be studied.

6.2 REVIEW OF LITERATURE

Laparocopic cholecystectomy was introduced in 1989 to replace 100 years old conventional
cholecystectomy.

Cushleri A et al, in an editorial released in 1990 cheered the first steps in laparoscopic
cholecystectomy as the beginning of a new exciting era but altered surgeons to be cautious in order to avoid a substantial surgically induced morbidity.[17]

MD Daniel J Deziel et al evaluated complications of laparoscopic cholecystectomy by a survey of 4292 US hospitals in 1993 in which 77,604 cases were reported by 1,750 respondents and summarised that laparoscopic cholecystectomy is essentially a safe procedure with low morbidity and mortality rates. However, bile duct injury occurs more frequently than during open cholecystectomy, and a significant proportion of operative deaths are related to technical complications .according to them the guidelines for prevention of operative injury are similar to those of any operative procedure, namely, adequate training and experience in humans, proper execution of appropriate techniques, and accurate identification of the anatomy.[18]

Radunovic et al. studied the postoperative complications associated with laparoscopic cholecystectomy and concluded that post operative complications associated with laparoscopic cholecystectomy have their own specific characteristics. They are more common in patients with older age, male gender, with increased levels of markers of inflammation (white blood cell count and CRP), and in cases of acute cholecystitis confirmed by pathohistology. In addition, a preoperative ultrasonographic finding of gallbladder empyema, or gallbladder wall thickness > 3 mm, suggests that there might be an increased probability for the development of complications. Major vascular complications like the injury of the common bile duct, bleeding from the aorta, inferior vena cava or iliac blood vessels, are life threatening, and the surgeon is required to do a conversion. Conversions in these cases

should not be perceived as a failure, but instead as a necessary procedure that will increase patient safety and likelihood for a favourable outcome.[19]

Kaushik et al (2010) in a study on complications of lapaproscopic cholecysectomy stated that Laparoscopic cholecystectomy (LC) established itself firmly as the 'goldstandard' for the treatment of gallstone disease, but it can, at times, be associated with signifi cant morbidity and mortality. Existing literature has focused almost exclusively on the biliary complications of this procedure, but other complications such as significant haemorrhage can also be encountered, with an immediate mortality if not recognized and treated in a timely manner. According to their study bleeding has been reported to occur with an incidence of up to nearly 10% in various series, and can occur at any time during LC (during trocar insertion, dissection technique or slippage of clips/ ligatures) or in the postoperative period. It canrange from minor haematomas to life-threatening injuries to major intra-abdominal vessels (such as aorta, vena cava and iliacs).[20]

Hargitai b et al in a study on Postoperative nausea and vomiting (PONV) stated PONV is one of the most frequent complications after surgery. The incidence is 20-30% in patients undergoing balanced anesthesia. They stated that incidence of PONV after certain surgical interventions, like laparoscopic cholecystectomy - is 25-75%. They did not find any factor related to laparascopic choloecystectomy which could elevate the risk of postoperative nausea and vomiting.[21]

Triantafyllidis et al in a study on complications of laparoscopic cholecystetcomy in a district genral hospital conducted on 1009 patients who underwent lapasroscopic cholecystectomy from 2000-2008 concluded e that laparoscopic cholecystectomy is a safe procedure, although it is associated with some serious complications. The most usual complication during laparoscopic cholecystectomy is bile leakage, which remains a significant cause of morbidity. Early identification and management of these complications will minimize a potentially devastating outcome.[22]

Nezam h afdhal et al in a study on complications of laparoscoic cholecystectomy stated that Serious complications of laparoscopic cholecystectomy, including bile duct injury, bile leaks, bleeding, and bowel injury, result in part from patient selection, inherent patient disease, surgical inexperience, and the technical constraints of the minimally invasive approach. 2) Early conversion to an open cholecystectomy should be readily accepted as the proper course if a safe dissection cannot be ensured laparoscopically.3) Repair of biliary duct injuries should always be approached by an experienced multidisciplinary team consisting of a surgeon skilled in advanced biliary surgery, diagnostic radiologist, interventional gastroenterologist, and interventional radiologist.4) External drainage of the gallbladder fossa should be achieved prior to referral to a specialist. Biliary leakage should be suspected when patients present after cholecystectomy with fever, abdominal pain, and/or bilious ascites. Large loculated collections should be percutaneously drained with radiologic guidance and a catheter left in place for continuing drainage.5) ERCP may define the leak and allow stent placement. If a patient with a bile leak continues to have severe abdominal pain from bile peritonitis or evidence of progressive intra-abdominal sepsis, operative exploration and washout is indicated.6) Occlusive injury to the right hepatic duct results in a segmental cholestasis and ultimately atrophy of the right lobe. The occlusion is corrected with a hepaticojejunostomy; segmental resection of the affected lobes may also be necessary if atrophy is significant. 7)Limited injuries to common bile or common hepatic ducts that are recognized at the time of surgery can be repaired by T-tube drainage of the common bile duct. 8) Primary repair of the bile duct should be avoided because of the high rates of breakdown or stricture formation. In cases of more significant damage to the duct, a hepaticojejunostomy will be required. 9)Delayed presentation of common bile or common hepatic duct injuries requires decompression of the liver with percutaneous stents to reduce,the risk of cholangitis and to define the injury. Although some patients can be treated with dilation and stent insertion, most will require a hepaticojejunostomy.

Bleeding can occur from the liver, arterial sources, or port insertion sites.[23]

Ashish dey et al in a study to determine the effect of low-pressure pneumoperitoneum and duration of surgery in laparoscopic cholecystectomy on postoperative shoulder tip pain. Enrolled 100 patients into two groups depending on the intraperitoneal pressure during laparoscopic cholecystectomy. Group A included patients in whom the intraperitoneal pressure was 13–15 mm of Hg and group B included patients who underwent surgery at 10–12 mmHg. Each group was then subdivided into two subgroups depending on the duration of surgery. In the first subgroup, the duration of surgery was less than 1 h and the next subgroup included patients who took more than 1 h. Presence or absence of shoulder tip pain was recorded within 4 h, at 24 h, and at 48 h. Total number of patients having shoulder tip pain in the lower pneumoperitoneal group was more than the higher pneumoperitoneal group in both subgroup. They concluded that intra-abdominal pressures and shorter duration of surgery were factors unrelated to incidence of shoulder tip pain after laparoscopic cholecystectomy.[24]

Kandil et al in a study on factors affecting the Shoulder pain following laparoscopic cholecystectomy: factors affecting the incidence and severity: Laparoscopic cholecystectomy (LC) has become the standard treatment for gall bladder disease. However, despite its low degree of invasiveness, many patients complain of postoperative pain and postoperative nausea/vomiting. This study was planned to evaluate different factors affecting the incidence and severity of postoperative shoulder-tip pain after LC. There were 62 patients reported to have postoperative shoulder-tip pain during the first 12 hours after operation, which decreased to 9 patients on the 10th postoperative day. A significant difference was observed in the prevalence of pain at different pressures, 11% with low pressure and increased to 20% with high pressure. The incidence of shoulder-tip pain was significantly more in patients with a longer duration of the operation of >45 minutes at 12 hours (23 [76.7%] versus 39 [55.7%]; P = 0.04), at 24 hours (23

[76.7%] versus 29 [41.4%]; P = 0.009), and at 3 days postoperatively (19 [63.3%] versus 20 [28.6%]; P = 0.01). The volume of used gases during the operation had no effect on the incidence or severity of shoulder-tip pain after LC. Also, the use of intraoperative analgesics had no effect on the incidence or severity of shoulder-tip pain after LC. he origin of pain after LC is multifactorial. We recommend the use of the lower pressure technique during LC, and as patients with and without drains have similar incidence of postoperative shoulder pain, drains should not be used with the intention of preventing shoulder pain.[25]

6.3 AIMS AND OBJECTIVES

To evaluate the immediate complications after elective Laparoscopic cholecystectomy like need for converting laparoscopic to open cholecystectomy, bleeding from abdominal cavity, nausea, vomiting, abdominal distension, shoulder pain and urinary retention.

7. MATERIALS AND METHODS

This is a prospective study and will be held in the Department of Surgery in Dayanand Medical College and Hospital, Ludhiana. This study will be conduct in patients who are undergoing laparoscopic cholecystectomy from 1st January 2020 to 31st December 2020.

7.1 Source of Data

The study will be conducted on patients who underwent laparoscopic cholecystectomy in surgery department DMCH Ludhiana. Their medical records during this time frame will be reviewed where all the available medical records and radiographs will be studied and evaluated according to the need of the study

7.2 METHOD OF COLLECTION OF DATA

Patients undergoing laparoscopic cholecystectomy in Dayanand Medical College and Hospital, Ludhiana after proper consent will be enrolled in study. The data will be collected by personal interview and Investigations done on routine basis.

Inclusion criteria: •

Patient undergoing elective laparoscopic cholecystectomy

- Patient diagnosed with
- Cholelithiasis with symptoms
- Gall bladder polyps
- Chronic cholecystitis
- Planned cholecystectomy (not simultaneous other operations)
- Patients giving written informed consent for enrollment in the study

Exclusion Criteria:

Patients not willing to be enrolled in the study

Patients planned for open cholecystectomy

Duration of study: 1 year

Outcome: 1. To study the incidence of the immediate complications after laparoscopic cholecystectomy

2. To correlate any aggravating or relieving factors with the immediate complications of laparoscopic cholecystectomy

Statistical analysis:

Data will be described in terms of range; mean ±standard deviation (± SD), frequencies (number of cases) and relative frequencies (percentages) as appropriate. All statistical calculations will be done using SPSS (Statistical Package for the Social Science) SPSS 21 version statistical program for Microsoft Windows.

7.3 DOES THE STUDY REQUIRE ANY INVESTIGATIONS OR INTERVENTIONS TO BE CONDUCTED ON PATIENTS OR OTHER HUMANS OR ANIMALS? IF SO, PLEASE DESCRIBE BRIEFLY.

NO

7.4 HAS ETHICAL CLEARANCE BEEN OBTAINED FROM YOUR INSTITUTION IN CASE OF 7.3?

Attached Herewith

LIST OF REFERENCES

1. Keulmans Y, Eshius J, Haes H, Wit LT, Gouma DJ. Laparoscopic cholecystectomy: Day care versus clinical observation. Ann Surg. 1998;228:734-740.
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PROFORMA

NAME	MRD NO
AGE	DOA
SEX	DOD
ADDRESS	

CHIEF COMPLAINT

CLINICAL DIAGNOSIS

INVESTIGATIONS

HMG :

HB

TLC

PLT

PTI/INR

USG FINDINGS :

DURATION OF SURGERY :

PREOP ANTIEMETIC GIVEN : YES / NO

POST OP ANTI EMETIC GIVEN : YES / NO

CATHETERIZED PREOPERATIVELY/ INTRAOPERATIVELY : YES / N0

DRAIN IN SITU : YES / NO

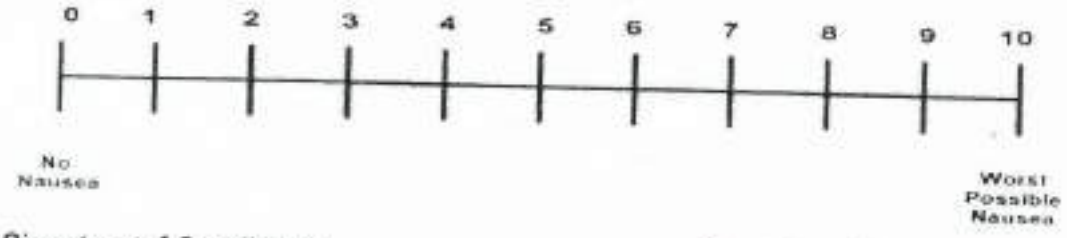
NATURE OF DISCHARGE IN DRAIN : BILIOUS / BLOODY

QUANTITY OF DRAIN OUTPUT WITHIN 24 HOURS : <50 ML/ HR

: 50 – 200 ML / HR

: > 200 ML/ HR

POST OP NAUSEA : YES / NO



Signature of Candidate

Signature of Supervisor

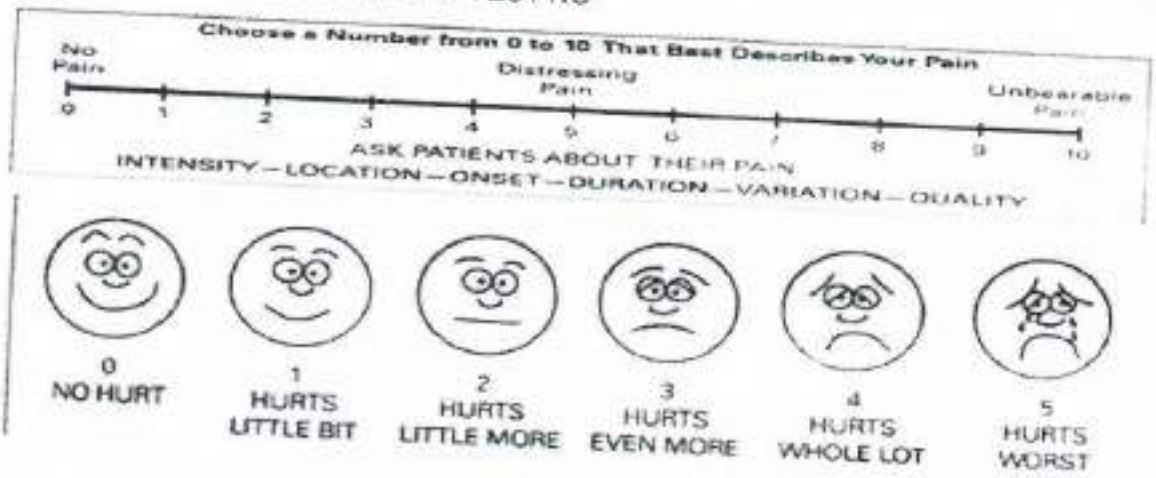
POST OP VOMITING : YES / NO

POST OP HEMORRHAGE PRESENT : YES / NO

POST OP USG DONE : YES/ NO

POST OP USG FINDING :

POST OP SHOULDER TIP PAIN : YES / NO


Choose a Number from 0 to 10 That Best Describes Your Pain
No Pain
Distressing Pain
Unbearable Pain
0 1 2 3 4 5 6 7 8 9 10
ASK PATIENTS ABOUT THEIR PAIN
INTENSITY – LOCATION – ONSET – DURATION – VARIATION – QUALITY
0 NO HURT
1 HURTS LITTLE BIT
2 HURTS LITTLE MORE
3 HURTS EVEN MORE
4 HURTS WHOLE LOT
5 HURTS WORST

IF YES : MEDICINE GIVEN

RELIEVED WITH MEDICATION : YES / NO

POST OP ABDOMINAL DISTENSION : YES / NO

POST OP URINARY RETENTION : YES / NO

NEED FOR CATHETERIZATION : YES / NO

TABLE TO SUMMARISE ABOVE

COMPLICATION	PRESENT	ABSENT
POST OP NAUSEA		
POST OP VOMITING		
SHOULDER TIP PAIN		
ABDOMINAL DISTENSION		
URINARY RETENTION		
HEMORRHAGE		

Signature of Candidate

Signature of Supervisor

INFORMED PATIENT CONSENT

Date: _____

I.....D/o, W/o, S/o.....

am willing to participate in the study **"EVALUATION OF IMMEDIATE POST OPERATIVE COMPLICATIONS AFTER LAPAROSCOPIC CHOLECYSTECTOMY"** The procedure with its complications has been explained to me in local vernacular language. I have fully understood that no special tests and extra expenditure in any form, merely for the purpose of thesis is being carried out. I am free to opt out the study any time without assigning any reason.

....

Signature of the Witness Signature of the patient

Name:

Signature of Candidate **Signature of Supervisor**

मरीज अनुमति फार्म

तिथि _____

मैं _____ पत्नी/पुत्र/पुत्री _____

निवासी _____

इस शोधकार्य **"EVALUATION OF IMMEDIATE POST OPERATIVE COMPLICATIONS AFTER LAPAROSCOPIC CHOLECYSTECTOMY"** में भाग लेने के लिए सहमत हूँ। मैं इस शोधकार्य में भाग लेने के लिए अपनी स्वेच्छा से तैयार हूँ। मैं पुष्टि करता/करती हूँ की यह स्वीकृति देने के लिए मुझे कोई आर्थिक प्रलोभन नहीं दिया गया और न ही दबाव डाला गया है। मुझे इस शोधकार्य का उद्देश्य स्पष्ट कर दिया गया है और मुझे यह विश्वास है की यह विज्ञान और मानवता के लाभ के लिए है। मुझे इस शोधकार्य में होने वाले जोखिम के बारे में समझा दिया गया है और मेरी समझ में यह जोखिम बहुत मामुली है।

मैं इस शोधकार्य में भाग लेने के सम्बन्ध में किसी भी समय अपनी अस्वीकृति व्यक्त कर सकता/सकती हूँ और मेरे अस्वीकृति व्यक्त करने का मेरे इलाज पर कोई प्रभाव नहीं पड़ेगा।

_____ _____

गवाह के हस्ताक्षर रोगी के हस्ताक्षर/अंगूठे का निशान

नाम: नाम:

_____

अन्वेषक के हस्ताक्षर

_____

विद्यार्थी के हस्ताक्षर

ਮਰੀਜ਼ ਰਜ਼ਾਮੰਦੀ ਫਾਰਮ

ਮਿਤੀ_____

ਮੈ_____ਪਤਨੀ/ਪੁੱਤਰ/ਪੁੱਤਰੀ_____

ਵਾਸੀ _____

"EVALUATION OF IMMEDIATE POST OPERATIVE COMPLICATIONS AFTER LAPAROSCOPIC CHOLECYSTECTOMY" ਤੇ ਚਲ ਰਹੀ ਖੋਜ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਲਈ ਰਜ਼ਾਮੰਦ ਹਾਂ। ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਲਈ ਮੈ ਆਪਣੀ ਮਰਜ਼ੀ ਨਾਲ ਤਿਆਰ ਹਾਂ। ਮੈ ਇਹ ਦਸਣਾ ਚਾਹੁੰਦਾ ਹਾਂ/ ਚਾਹੁੰਦੀ ਹਾਂ ਕੇ ਇਹ ਰਜ਼ਾਮੰਦੀ ਦੇਣ ਵਾਸਤੇ ਮੈਨੂ ਕਿਸੇ ਵੀ ਤਰਾਂ ਦਾ ਲੋਭ-ਲਾਲਚ ਨਹੀ ਦਿੱਤਾ ਗਿਆ ਅਤੇ ਨਾ ਹੀ ਕੋਈ ਦਬਾ ਪਾਇਆ ਗਿਆ ਹੈ। ਮੈਨੂ ਇਸ ਖੋਜ ਦਾ ਮਨੋਰਥ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ ਅਤੇ ਮੈਨੂ ਇਹ ਭਰੋਸਾ ਦਵਾਇਆ ਗਿਆ ਹੈ ਕੇ ਇਹ ਖੋਜ ਵਿਗਿਆਨ ਅਤੇ ਮਾਨਵਤਾ ਦੀ ਭਲਾਈ ਲਈ ਹੈ। ਮੈਨੂ ਇਸ ਖੋਜ ਵਿਚ ਹੋਣ ਵਾਲੇ ਖਤਰੇ ਬਾਰੇ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ ਅਤੇ ਮੈਨੂ ਇਹ ਯਕੀਨ ਹੈ ਕੇ ਇਹ ਖਤਰਾ ਬਹੁਤ ਮਾਮੂਲੀ ਹੈ। ਮੈਨੂ ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਦਾ ਢੰਗ – ਤਰੀਕਾ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ।

ਮੈ ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਬਾਰੇ ਆਪਣੀ ਰਜ਼ਾਮੰਦੀ ਕਿਸੇ ਵੀ ਸਮੇ ਵਾਪਸ ਲੈ ਸਕਦਾ ਹਾਂ/ ਸਕਦੀ ਹਾਂ ਅਤੇ ਮੇਰੀ ਰਜ਼ਾਮੰਦੀ ਵਾਪਸ ਲੈਣ ਦਾ ਮੇਰੇ ਇਲਾਜ ਤੇ ਕੋਈ ਅਸਰ ਨਹੀ ਹੋਵੇਗਾ।

_____ _____

ਗਵਾਹ ਦੇ ਹਸਤਾਖਰ ਮਰੀਜ਼ ਦੇ ਹਸਤਾਖਰ

ਮਿਤੀ_____ ਮਿਤੀ_____

ਪਤਾ _____ ਪਤਾ _____

_____

ਨਿਰੀਖਕ ਦੇ ਹਸਤਾਖਰ

_____

ਸਿਖਿਆਰਥੀ ਦੇ ਹਸਤਾਖਰ